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# MONTHLY REPORT

OF THE

## DEPARTMENT OF AGRICULTURE

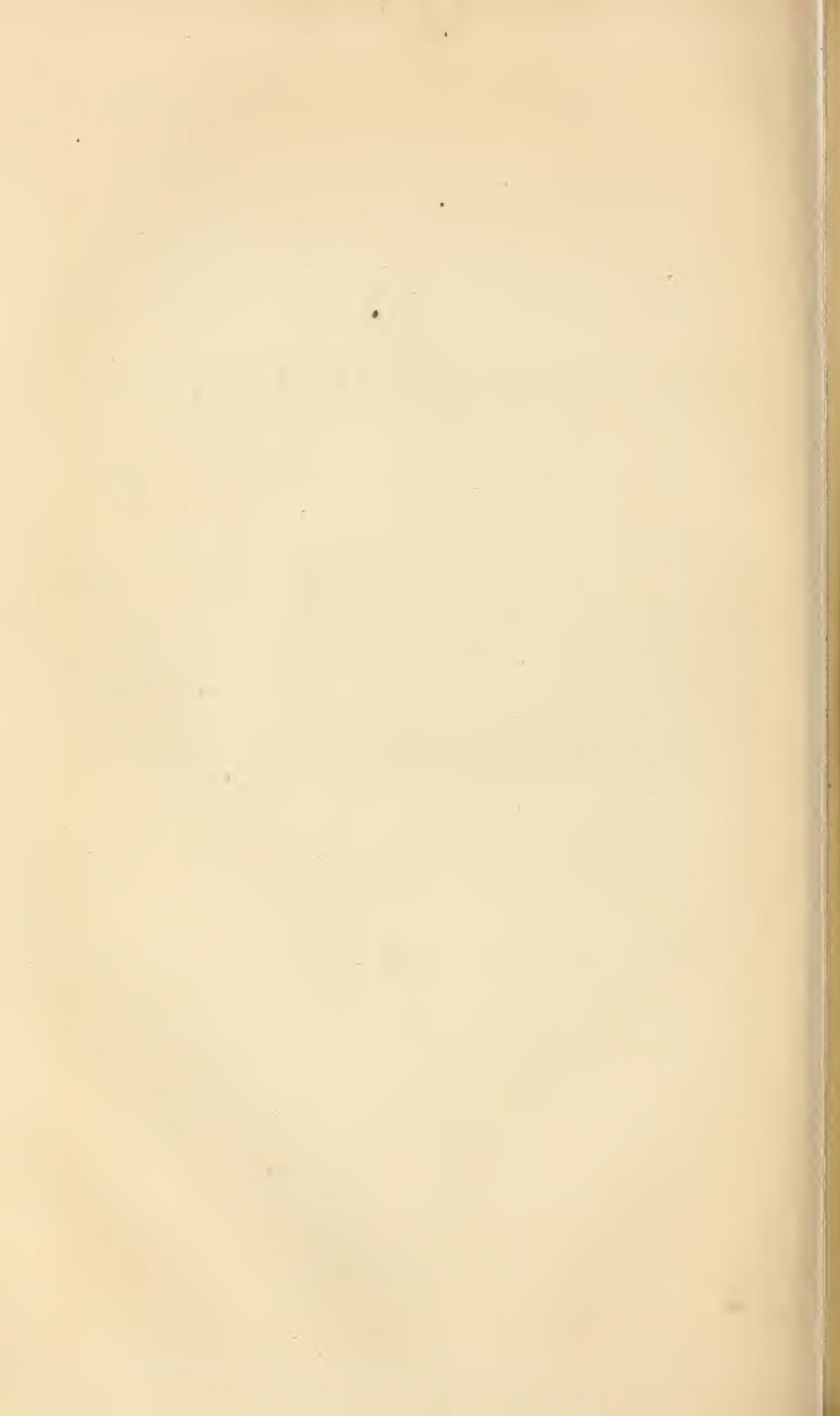
FOR

MARCH, 1866.

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WASHINGTON:

GOVERNMENT PRINTING OFFICE.  
1866.



## MONTHLY REPORT.

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DEPARTMENT OF AGRICULTURE, *March, 1866.*

The increasing fatality of the cattle plague in Great Britain, and the failure of all remedies to cure it, and of local measures to arrest its spreading, has at length forced Parliament to enact laws similar to those of the western German nations, which establish the complete isolation of infected places; the destruction and deep burial of all infected cattle; and the complete disinfecture of all things and places where the disease may exhibit itself. The government of Great Britain, in addition, proposes to restrict the moving of cattle—virtually to stop the cattle trade, a measure that has become a necessity there.

The United States consul at Hamburg has notified the Secretary of State of his refusal to allow the importation of a lot of hides to this country, which he had reason to believe came from places where this disease prevails. The importation of queensware or crockery may bring it here by the infection of the straw used in packing it in the crates. In many ways, therefore, the liability of its introduction here is great, and this department has brought the matter to the consideration of Congress, in order that an act may be passed providing for a *cordon* around every case that might arise through importation in the United States.

Should Congress pass such an act, every citizen should be zealous in the enforcement of its provisions, for few greater calamities could befall our people than the existence of the cattle plague in the United States. The only possible way to prevent its spreading, should it come, is by the enforcement of the law no matter what inconvenience may be occasioned to individuals.

The existence of a sickness often fatal in Germany, produced by eating pork, affected with a disease known as trichinæ, has led to fears in this country, lest pork here might occasion a like disease. This department has given its attention to a case of it reported as originating in Detroit, and the present number contains information relating to it, as well as the causes producing the trichinæ, together with a suggestion as to a probable preventive—one which, from its good effects in other respects, commends itself to every farmer raising hogs. I am clearly of the opinion that there is no more danger of this disease now than there has been in any previous years.

This number of the monthly report shows the amount of farm stock stated in tenths, and their prices, in February last, as compared with the amount and prices of January, 1865. It will be seen that the prices of stock, except sheep, have rather advanced than receded, because of their scarcity and the demand for them

in the south. This is just what I predicted eighteen and twenty-four months ago, when we were urging a greater attention to stock-raising.

In the next report the amount of this stock in numbers will be given, the prices, and the value of each kind and for each State, in the tables similar to those published last year in the April and May number.

The backwardness of the spring will delay the issuing of the first circular relative to the crops of 1866. It is usually a month after the fall-sown crops have grown enough in the spring to determine their appearance and the injuries received during the winter in the more southern counties of the western States, before that growth is sufficient to determine the condition of these crops in the northern counties and northern States.

The statements relative to the present condition of these crops are, as usual at this time of the year, very conflicting; but it is believed that whilst the severe cold has killed the tops of the wheat, unprotected generally by snow, the roots have not been killed or subjected to heaving out to the extent usual in severe winters, or as apprehended by many persons.

With the approach of the warm weather, a greater activity begins to manifest itself to lessen the fatality of the cholera should it come into the United States, and the suggestions relative to it, in this report, for the protection of the farmer and his household, should be heeded by him.

ISAAC NEWTON,  
*Commissioner.*

## THE CHOLERA—THE CATTLE PLAGUE—THE HOG CHOLERA—THE TRICHINIS.

In the February report we asked the attention of the public to one matter relative to the first two of these diseases, namely, the numerous ways in which their atomic particles are disseminated. This was done for two purposes—to invite from the legislation of the country such powers as would be necessary to meet the rinderpest, if it, unfortunately, should be introduced into the United States, and to induce on the part of individuals prompt action in aiding the enforcement of these powers, and such care on their part as would protect themselves from these diseases.

Although the consideration of human diseases does not come within the province of this department; yet, where such consideration serves to more fully unfold the character of the cattle plague, and at the same time aids the farmer to protect himself and family, it is proper to refer to diseases destructive to him and them. And when such a disease as cholera, so fatal in past years, again threatens him, it is a duty we owe to him and his pursuit to call his attention to a few simple facts, that may serve to prevent that imprudent course of self-treatment by which so many lost their lives in former visitations of this epidemic. And by so doing, we will move him to a greater interest, to a more prompt and efficient action, in diseases which affect his stock. In resuming, therefore, our comments on the diseases which are embraced in this article, we state briefly the symptoms of the diseases, and the remedies most efficient and available.

### I. CHOLERA.

In what we may have to say of this disease, we confine our remarks to such course of treatment as will aid the farmer to a self-treatment until he can secure medical aid. His remoteness from town in so rapid a disease is often fatal, when not aided by judicious self-treatment.

1. *Symptoms of cholera.*—Dr. Hall, in his *Journal of Health*, (January number, 1866,) has published a most excellent article on cholera. We take from it these brief extracts, hoping, however, that all who can obtain that number will procure it. Usually the first symptoms is a looseness of the bowels, accompanied by a constant uneasiness, and soon marked by a rapidly increasing weakness. This is our personal experience of the disease in 1832.

“The term ‘looseness,’” says Dr. Hall, “as applied to Asiatic cholera as a premonitory symptom, is simply this: if in cholera times a man passes from his bowels, even but a single time, a dirty, lightish-colored fluid, of consistence and appearance, a few feet distant, of a mixture of half-and-half milk and water, that is a premonition of cholera begun, and he will be dead in perhaps twenty-four hours at farthest; and as the passages become less frequent and of a darker or greener or thicker nature, there is hope of life. It does not require two such passages to make a looseness; one such is a looseness, and a very dangerous one. Nor does it require a gallon in quantity; a single table-spoonful, if it weakens, is the alarm-bell of death in cholera times.”

An unusual costiveness is a dangerous thing, and demands medical advice. And of the "uneasiness" attending this looseness, he says :

"Speaking, then, of that sensation of uneasiness, without acute pain, in the region named ('the belly,') it comes on more decidedly after an evacuation of the bowels. In health, this act is followed by a sense of relief or comfortable-ness ; but when the cholera influence is in the atmosphere, even a regular passage is followed by something of this sort, but more and more decided after each action over one in twenty-four hours. The feeling is not all ; there is a sense of tiredness or weariness which inclines you to take a seat ; to sit down and maybe to bend over a little, or to curl up on a bed. This sensation is coming cholera, and if heeded when first noticed, would save annually thousands."

A marked weakness soon commences, growing constantly and perceptibly greater. It was this, as well as the "looseness and uneasiness," that caused us, under an attack of this disease, to instantly seek a physician, and barely in time to save life.

2. *The remedies.*—What is to be done? Not as hundreds and thousands have done—seek a change of residence, hoping it is an infected atmosphere that causes these symptoms, and to go out of it is to live; on the contrary it is to die. The disease is within you.

"Cholera," says Dr. Hall, "being a disease in which the bowels move too much, the object should be to lessen that motion ; and as every step a man takes increases intestinal motion, *the very first thing to be done in a case of cholera is to seek QUIETUDE.* It requires but a small amount of intelligence to put these ideas together, and if they could only be burnt in on every heart this fearful scourge would be robbed of myriads of its victims. There can be no cure of cholera without quietude—the quietude of lying on the back. Perfect quietude on the back is *the first*, the **IMPERATIVE**, the **ESSENTIAL** step towards the cure of any case of cholera.

"The *second* step to the making of this quietude more perfect is the binding a cloth around the belly pretty firmly. This acts beneficially in diminishing the room within the abdomen for motion. This bandage should be about a foot broad, and long enough to be doubled over the belly ; pieces of tape should be sewed to one end of the flannel, and a corresponding number to another part, being safer and more effective fastenings than pins. If this cloth is of stout woollen flannel, it has two additional advantages—its roughness irritates the skin and draws the blood to the surface from the interior, and by its warmth retains that blood there ; thus preventing that cold, clammy condition of the skin which takes place in the last stages of cholera."

Attending every attack of cholera is a desire for water. And to quench this, use ice broken into small pieces, and swallow them ; or if ice cannot be had, which generally is the case in the country, drink the coldest water.

Dr. Hall thus sums up his advice :

"The *first* step, then, to be taken where cholera prevails, and its symptoms are present, is to lie down on a bed.

"2. Bind the abdomen tightly with woollen flannel.

"3. Swallow pellets of ice to the fullest extent practicable.

"4. Send for an established, resident, regular physician. Touch not an atom of the thousand things proposed by brains as 'simple' as the remedies are represented to be, but wait quietly and patiently until the arrival of your medical attendant."

And this part which follows is especially applicable to the farmer: it is for

him these brief sentences are written, because he must wait, often, too long for his safety, when depending entirely on medical advice.

"But many of my readers," says Dr. Hall, "may be in a condition, by distance or otherwise, where it is not possible to obtain a physician for several hours, and where such a delay might prove fatal. Under such circumstances, obtain ten grains of calomel and make it into a pill with a few drops of gum water; dry it a little by the fire or in the sun and swallow it down. If the passages do not cease within two hours, then swallow two more of such pills, and continue to swallow two more at the end of each two hours until the bowels cease to give their light-colored passages, or until the physician arrives."

"In many bad cases of cholera the stomach will retain nothing fluid or solid, cold water itself being instantly returned. A calomel pill is almost as heavy as a bullet; it sinks instantly to the bottom of the stomach, and no power of vomiting can return it."

This treatment, excepting the bandage, we have experienced, and know its benefits. To this counsel Dr. Hall adds the following relative to

3. *Preventives.*—"There are none, there never can be, except so far as it may be done by quietude of body and mind, by personal cleanliness, by regular and temperate habits of life, and the use of plain, accustomed, nourishing food."

These things are well advised, but if cholera poison is transmitted in the modes noticed in the last number of these reports, then we have to add another in regard to water drank. It should be boiled, for a boiling heat destroys the vitality of the cholera poison. To personal cleanliness must be added cleanliness of the town or city, and of every place around the farmer's home, especially as to the excrement of the sick with cholera.

But there is a more general view to be taken of preventives. If the vital powers, producing health, are antagonistical to those producing death, then whatever impairs the vigor of the former should be removed. They embrace the preventives named by Dr. Hall, but much more. The purity of the atmosphere, especially of the sick room, must be preserved by ventilation. But we have known persons lose their lives in this wise: They have attended on the sick until exhausted, and then doze in sleep over the bed. In sleep the vital powers act more languidly than when we are awake, and of course less strongly when the body and mind are exhausted by long and anxious watching. In circumstances of this kind, rest should be sought for in a well-aired and healthy room, and with the protection of warm clothing. But we content ourselves with this general reference, because these are things about which the physician may be consulted. Our object is to lay before the farmer such advice as his remoteness from the physician renders necessary. We have but to add, that as soon as the cholera is near, which, for him, we entreat it may never be, that he procure the flannels and medicine recommended and follow the counsel here given.

## II. CATTLE PLAGUE.

1. *Symptoms.*—In previous articles we have published the symptoms of this disease. We now recur to this part of our subject for the purpose of impressing on the minds of the public two things: first, that when the first symptom of its presence is perceived, it already has a fatal power over the animal; second, that, therefore, preventive measures are the only reliable ones.

We have before us an admirable work on this disease, by H. Bourguignon, now of Great Britain, but formerly of France. It is a book of 380 pages, and ought to be republished in this country. Money could be much more usefully expended in this way than by sending commissioners to England to report their views of a disease which must ever be immature compared with those given in this work.

The symptoms, as given by this writer, as well as by others of most diseases, have a fourfold division—first, the period of incubation; second, the period of initiation; third, the period of endurance; and fourth, the period of decline.

We have before said that the first symptom observed is a heaviness in the looks and motions of the animal, followed quickly by muscular quiverings, a refusal of food, and a staring and dead condition of the hair. But these symptoms belong to the second division, that of initiation. To understand the right direction of our efforts, we must look closely into the first division—

*Incubation.*—When an atomic particle of the disease, so small that it is invisible, is inhaled into the lungs of the animal, it reaches the blood of the lungs, and commences to multiply itself. Silently and unperceived it is performing this work, and occupies a period of from ten to twenty days before any outward indications are usually given of its presence.

“In some animals,” says Mr. Bourguignon, “it scarcely betrays the derangements produced by its morbid operation. They preserve their appetite and their usual looks. A close and attentive observation would alone be able to distinguish some slight alterations in their way of living, in the regularity of their rumination and sleep. But in others there is no mistaking a something irregular and unusual in their appearance and living. The vital state is no longer the same. Thus, an animal which used to be cheerful and familiar becomes silent and solitary; it browses the grass with less eagerness and avidity; it lies down more frequently and longer; it lingers by the side of the hedge and the field, or it wanders about here and there with a listless look, and without any object.”

These slight symptoms of derangement, for all practical purposes, in this country, where no farmer has time to watch his stock closely enough to detect them, may be regarded as too slight to be useful. But the fatal work is done during this stage of the disease. The same writer, describing it, says:

“Soon the elaboration of the virulent miasma in the organic structure changes the quality of the blood and humors, the functions of assimilation and secretion are modified, the nervous centres receive vitiated organic elements and are disturbed in their physiological conditions, and the smitten animal betrays that state of latent uneasiness which he is imperfectly conscious of by a general look of heaviness and stupor, (*tuphos*,) [a Greek word meaning stupor,] which has suggested for this disease its name of *typhus*.”

When this inward progress of the disease has advanced so far that health must conflict with disease, then the second period, of initiation, commences. A fever ensues, constipation of the bowels, then nature throws the poisonous particles out of the blood upon the inward surfaces—on the lungs and windpipe, or much oftener, on the mouth, throat, stomachs, and intestines. This effort of nature is evinced by a violent diarrhoea. It is the casting out of the system these poisonous atoms, and constitutes the third stage of the disease, the endurance. Usually the system sinks under the effort; it gradually yields, the diarrhoea

becoming offensive, tumors break out on the skin, the eyes are full of thick mucus or matter, the lungs are stopped up, and the animal declines rapidly. This is the fourth and last stage of the symptoms.

It is very obvious that when the atoms of poison have become so multiplied during the first division of these symptoms, they cannot be destroyed in the system, no more than they can in human small-pox or measles. They must be brought out of the blood upon the outward or inward surfaces. The remedies to be applied must aid their expulsion and sustain the system during the time they are being cast out.

2. *Remedies.*—As yet no remedy has been found sufficient to sustain the system in this conflict with the disease. Science has lent all its efforts, but as yet in vain. Practical skill has not been more successful, and experiment has not been fortunate enough to light upon an effectual remedy. Some remedies have, for a time, apparently, been of some utility, but further trial demonstrated their insufficiency. The homœopathic treatment in Holland, and the vaccination in Great Britain, gave some hopes, only to end in disappointment. The following letter, just received from England, refers to another remedy, but its final success remains to be determined :

"CONSULATE OF THE UNITED STATES OF AMERICA,  
"Bristol, February 14, 1866.

"SIR: A reputed cure for the cattle plague has just been announced in this country, which I append with certain comments and remarks.

"Respectfully, yours,

J. EASTMAN.

"Hon. ISAAC NEWTON, *Commissioner.*"

The following are the references to the cure sent by our consul:

"Lord Leigh professes to have found a cure for the cattle plague. He says that on Friday week the rinderpest broke out on his farm with great violence, and he destroyed 22 valuable animals in the hope of stamping it out. He happened to see, however, a paragraph in the Times stating that Mr. Worms had been successful in treating the disease, and he sent for that gentleman to the Lodge, Egham, Surrey, asking him to come and try his system. Mr. Worms did come, and selected 24 cattle which were infected for treatment, some in the first stage, some further gone, and one so far gone that it had been ordered to be destroyed. The medicine was administered to them by Mr. Worms, and in 24 hours they were all well and taking their food as usual."

The following is a case of a later date :

"Some further evidence of the efficacy of Mr. Worms's treatment of the cattle plague, which proved so successful upon Lord Leigh's herd, is furnished in yesterday's London papers. It appears that the same treatment has since been tried upon some infected animals in the herd of Baron Rothschild, at Mentmore. In one case the animal had exhibited all the symptoms of the disease for upwards of 48 hours, and Mr. Worms, when he arrived, pronounced it hopeless. However, he administered his specific; and we are assured that, although the animal may die from exhaustion, the disease appears to have been conquered. In two other instances the treatment was quite successful, and the animals are believed to be out of danger."

The cure itself, and the mode of administering it, are as follows :

"We are informed that Lord Leigh's herd of cattle, which was a short time

ago in danger of being devastated by the rinderpest, is now entirely free from that disease, and that this result is attributed by his lordship to the use of the following formula:

“Equal portions of onion, shalot, and garlic. Peel them and pound them together, so that they may be reduced to a fine pulp. Add to this about one-third of their weight of ground ginger. Take asafoetida about two-thirds of the weight of the ginger; pour sufficient water over it to cover it, and allow it to boil, stirring it all the time, so that little or no sediment remains; pour the liquid, which should be over the pulp, and mix thoroughly. Boil some rice in water until it is thoroughly soft, and add the rice-water to the mixture, so that the former may be one and a half times in excess of the latter; mix thoroughly, and allow the whole to cool.

“*Dose.*—For a full-grown animal, a good pint; for a heifer, a good half pint; for a calf, rather less than half pint. Medicine to be given the moment the animal’s breath is tainted, and should be repeated in twenty-four hours in very bad cases. Should the animal’s bowels be confined after twelve hours, and the stomach swollen, administer to a full-grown animal half a pound, to a calf quarter of a pound, of fresh unsalted lard, made into boluses. If the mouth should be sore, wet it with a pulp made of Seville orange peel boiled.

“*Diet.*—Two hours after medicine the animal to be fed with two or three pints of rice gruel, and during two days nothing else than rice gruel and a little sweet hay.”

“His lordship has informed several of the principal veterinary surgeons in Warwickshire of the successful treatment of his cattle with this recipe, and is now in Cheshire, where the cattle plague is raging with great virulence, for the purpose of having the formula tried there. Of course it would be premature to pronounce any opinion at present; but we sincerely hope that Lord Leigh, who is as energetic as he is popular as lord lieutenant of Warwickshire, may have found the means of arresting the dreadful scourge with which the country has been visited, and with which it continues to be so seriously threatened. Lord Leigh lost twenty-two head of cattle before he was put in possession of the means of curing the disease.”

Wishing, but not hoping,\* that this remedy may prove a cure indeed, we turn to that which to us promises a better hope for success, namely, a preventive.

#### PREVENTIVES.

These are of two kinds—those which render the animal proof against the effect of the poison of the disease, and those which prevent the poison from a contact with it.

Of the former preventives we propose to consider, first, such as destroy the life of the poison, or its power to propagate itself; and second, such as will destroy the liability of the animal to contract the disease. The first embraces all the disinfectants; the second, vaccination and inoculation.

Whether we regard the atomic particle of poison as a germ capable of reproducing itself, as seeds reproduce the vegetables from which they spring, or as a poison resulting from a perverted secretion of the body, which by chemical change converts a healthy secretion into its own poisonous nature, all have ever

\* The Agricultural Gazette (London) of February 24, ten days later, and which has been received since the foregoing was written, says: “The last new remedy, Mr. Worms’s onion diet, notwithstanding the frequent testimony which is still borne to its value in the columns of the Times, was shown by Mr. Simonds to have been really ineffective in some of the best attested examples of its successful agency.”

hoped to find some means of destroying either the life of the poisonous germ or its chemical power by a substance that may be inhaled with the poison and destroy it, or that may destroy it before being inhaled. "The developed miasms hang suspended in the air; we may, perhaps, one day destroy them, if not in the outer atmosphere, at least in the stalls and sheds where the animals inhale and absorb them." So hopes Mr. Bourguignon; and every substance that might prove a disinfectant has been vainly tried against the cattle plague. The *Mark Lane Express* (London) says:

"The farmer, in his dismay, is justified in trying every nostrum suggested against the plague. The sheds smell of chloride of lime, the yards reek with chlorine, the beasts' noses are dabbed every morning with tar, or they wear on their horns rings of flannel wet with odorous carbonic acid. Men administer frequent drinks of chloride of potash, chloric ether, and whiskey, or give cayenne pepper, or season the water-troughs with acids, or serve ten drops of arsenicum out of a soda-water bottle. Still, yards full of bullocks are being cleared before our eyes, despite of every such precaution; but brave-hearted to the last, we yet hope that something may turn up."

This experience of Great Britain shows that disinfectants to destroy the power of the poison have proved unavailing, and preventives, which render the animal proof against the poison, have also been tried. These are vaccination and inoculation. The Russians have inoculated the poison into healthy animals, but most of them died. They have taken the poison from the latter and inoculated it to a second set; and the poison from this set, and tried upon a third set, and so on to the tenth lot. The malignity of the poison became less and less, as it was transmitted from the first to the tenth lot. Mr. Bourguignon thus refers to this Russian practice, and its results:

"The first inoculative attempts were very fatal; they caused the death of all the inoculated animals. But it was soon perceived that these grievous results, far from prejudicing the theory, really confirmed it; and that the virus, attenuated in its toxic (poisonous) properties, would prove as effectual as was expected. And truly, in 1854 and 1855, at the Dorpat establishment, the inoculations made with a better selected virus afforded results less disastrous. At Kozau they were still more satisfactory. In fine, passing from experiment to experiment, they arrived at the conclusion that it was necessary to inoculate several heads of cattle, the one after the other, without having recourse to any other virus than the first inoculated, so that they might thereby obtain virus of the second, third, fourth, fifth, and up to the tenth generation. The virus thus attenuated in its morbid effects answered at length every experiment, and oxen thus inoculated could mingle with impunity with diseased cattle.

"At the veterinary establishment of Chalkoff they inoculated, during eight meetings, 1,059 animals, with virus of the third generation, and the results were as satisfactory as could be wished for, only sixty animals having sunk under the effects of this preventive operation."

We have not seen any account of experiments in Great Britain by inoculation. The only hope that Mr. Bourguignon has is in this preventive, but, as he says, some day we may, perhaps, destroy the miasms in the stalls and sheds, and, therefore, as said by the *Mark Lane Express*, the farmer needs to try everything.

We have noticed the present condition of this class of preventives, that all may see the absolute necessity of relying on the other kind of preventives,

those of the second class of our first division, to prevent the poison from contact with the animal. About these we have fully spoken heretofore. The most effectual one is "*the cordon*," strengthened by the most rigid measures to render it effectual.

### III. THE HOG CHOLERA AND TRICHINIS.

The rinderpest is not more fatal to the ox than these diseases are to the hog. Hundreds of thousands of dollars have been lost to this country by the hog cholera—as it is most generally called but by some, the hog erysipelas. No legislation has been had to prevent the driving through healthy districts droves of hogs which have the cholera, and thus the disease has been spread over nearly the entire United States.

It is caused by an animal poison; but whether, like the small-pox and cattle plague, inhaled into the blood, or, like that of human cholera, swallowed into the digestive canal, is not satisfactorily determined. But from the rapidity of its action, and the freedom from eruptions on the skin, it is, perhaps, more a disease of the intestinal canal than of the blood. It presents, however, many characteristics of the erysipelas.

1. *Symptoms.*—The hog is noticed to eat less eagerly, to stop and go to a branch or other place where it can get water; to drink eagerly, then to commence vomiting, which continues and is followed by severe purging. Death usually occurs in a day or two.

2. *The remedy and preventive.*—No certain remedy is yet known; but such as affords some promise, we mention.

We take from the Louisville Industrial and Commercial Gazette the following:

"*Cure for the hog cholera.*—Take ten grains of calomel, ten grains of copperas, and ten drops of turpentine. Give it in slop; or if the hog will not eat the slop, drench him.

"This remedy has been used with great success. Farmers who used it as a preventive have never lost any hogs by cholera, and it is a certain cure if the animal is able to swallow it."

Although we have no other knowledge of this remedy than the statement of the *Gazette*, yet our own experience in the use of copperas encourages us to hope much for it.

At one time our farm was surrounded with this disease, and all our neighbors lost their hogs—one of them more than a hundred head. These had access to our own, there being nothing but the rail-fence separating them. We had about 60 head, and not one of them had the disease, and it never was on the farm. The hog is subject to two evils, lice and intestinal worms, both of which are very unfavorable to his thrift. We salted the hogs twice a week with a mixture composed of three parts of salt, two of pulverized brimstone, and one of copperas, or nearly in that proportion, commencing with smaller portions of the last two, and increasing them as the hog would take them. The good effect of this "combination" was seen in freedom from lice, and, when butchered, from intestinal worms. We have always believed that the copperas acted

as a preventive against the cholera ; and seeing in the above remedy the same ingredient, we are disposed to think well of it.

But we have referred to the use of copperas for another purpose, too. It will presently be seen that there is much reason to fear the introduction of the trichinæ in this country ; and should it be here now, or in future, we hope much that it may be as efficient against the trichinæ worm as against the more common intestinal worms.

We publish the following communication, having no faith in the supposed cause or remedy. But in so great a scourge as the hog cholera, we must not forget what the *Mark Lane Express* says of the cattle plague : "The farmer, in his dismay, is justified in trying every nostrum suggested :"

"LEBANON, KY., February 16, 1866.

"DEAR SIR : I mentioned in my last that I would send you a remedy for the hog cholera. It is not by dosing a hog with medicine, but by taking the *black teeth* from his jaws, that will cure him. I enclose you a tooth that was taken from my brother-in-law's hog in the incipient stage of the disease but a few days ago. I am told the hog is cured. You will observe a black spot in the inner surface. After the disease had made some progress the entire tooth became *black*. A little boy made the discovery in a pet pig that was lying upon the ground nearly dead, and the father of the boy knocked out seven black teeth from the jaws of the pig, and it was entirely well in two days. The man's name is Dition. He is an indigent, illiterate shoemaker, but has the character of industry and honesty. I have had a conversation with him since I wrote you. He lives in the town of Bradfordsville, in this county, (Marion.) The discovery was made two years ago, and in no instance has he failed in effecting a cure when all the affected teeth were taken from the hog's jaw. The disease should be named *black tooth*.

"J. B. GOODWIN.

"ISAAC NEWTON, *Commissioner.*"

The tooth sent by Mr. Goodwin has a black spot on the upper part of the inner side. It is upon the surface only, and how it could be the result or the cause of so fatal a disease cannot be determined by us. But facts are always potent things, whether they can be successfully explained or not ; and so we give publicity to the statements forwarded to us by our correspondent, although we do not think the spot on the tooth has any connexion with the disease.

2. *The trichinæ.*—This *new* disease, as is generally supposed, demanded the immediate consideration of this department. The great interest effected by it is too important to the country, both now and in all time to come, to be overlooked for a moment ; and, on the other hand, the lives of every class are too sacred for us to seek to uphold that interest by endangering even a single life. What we have collected we give, regarding far more than one life than the upholding of the hog interest.

The disease to which the name of *trichinæ* has been given is produced by a small worm, the egg of which, when taken into the stomach, hatches, producing a small worm ; and then this worm finds its way to the muscles of the body and limbs, multiplying with such extraordinary rapidity that in a few days they become millions. They are imbedded in the muscles, lying in a coil, in-

visible to the naked eye, and by their numbers destroying life. The following letter from our excellent consul in Altona, Germany, speaks of the cases which have attracted so much interest in Europe and America :

“ UNITED STATES CONSULATE, ALTONA,  
“ February 16, 1866.

“ DEAR SIR : The very valuable monthly report of your department for November is duly received. I have never received it for the months of January, February, March, and September. Perhaps you will be good enough to let me have these back numbers.

“ The cattle plague has not made its appearance in Holstein yet; but another and most dreadful disease has appeared in swine, called trichina. To give you some idea of the nature of this singular disease, it is said to be by the medical faculty a worm of infinite smallness, ingenerated in the flesh, and whoever eats of it in an uncooked state, as the Germans very commonly do, are seized of pains in the body and stomach, and die in a few days, suffering intense agony. This malady made its appearance at Hadersleben, a village in North Schleswig. Some two hundred persons were taken suddenly sick in the village after eating bacon bought at a small store. In a few days eighty of them died in great agony, as if from cramp in the stomach and bowels. A celebrated doctor of medicine in Berlin, named Virchow, having seen accounts of these sudden and terrible deaths in the newspapers, visited Hadersleben with a view to investigate the affair. Being informed of their having eaten this bacon, segments of it were submitted to a careful microscopic examination, and a worm called trichina was found in it in large numbers. A *post-mortem* examination was then made of the bodies of the deceased, and trichinae were discovered in their stomachs and flesh in the same proportions as found in the bacon they had eaten. There is much written from day to day upon the subject in the German newspapers, and such is the excitement here, nobody dares to eat bacon until it has undergone a microscopic examination.

“ I remain yours, very truly,

“ N. MARSH.

“ Hon. ISAAC NEWTON,  
“ *Commissioner of Agriculture.*”

The German cases here spoken of gave so much notoriety to the disease, that most persons believe it is a new complaint; but this is not the case. It would seem from the above account that some hogs, perhaps not more than one, had trichinae in large quantities, and was sold out by a retail dealer to a large number of persons, most of whom eat pork either raw or so slightly cooked that the worm is not destroyed.

The following account of the trichina, so called from the Greek word *thrix*, meaning a hair, we take from William Baird's *Encyclopædia of the Sciences*, published in 1858 :

“ *Trichina*, a genus of intestinal worms, the species of which are found parasitical in the muscles of human subjects, and some of the lower animals. *Trichina spiralis*, the worm upon which the genus is founded, is very small, of a cylindrical form, narrowed towards the anterior end, obtuse and rounded posteriorly. It is generally found spirally twisted upon itself, but when extended, measures in length about  $\frac{1}{25}$ th to  $\frac{1}{30}$ th of an inch, and about  $\frac{1}{700}$ th to  $\frac{1}{800}$ th of an inch in diameter. The muscles of the trunk are the parts where these little creatures are chiefly found, and they occur sometimes in very great numbers. They appear to be derived from the food, and can apparently be communicated from one

animal to another. A dog, for instance, has been found to have its muscles infected with the worms after having been fed upon the flesh of a badger which was loaded with them."

These worms, then, are no newly discovered creature, nor have they suddenly shown a dangerous character, which they have not before exhibited; indeed, they have been thought rather harmless when imbedded in the muscles. The danger seems to arise chiefly where they are introduced into the stomach in large quantities. From the stomach and bowels they pass into the muscles, by eating their way through them, and when in large numbers, the injury to these organs results in inflammation. The following statements show in what manner the trichinæ pass from the stomach and bowels to the muscles:

"The symptoms," says Mr. Gamgee, an English writer, "have been ascertained in the course of experiments, and they are found to vary somewhat in different cases. Not uncommonly rabbits, which are made to swallow thousands of trichinæ, appear to suffer no indisposition for some days, and then die suddenly. Leuckart fed nine rabbits with half an ounce of muscle, containing about 160,000 trichinæ, and repeated the dose about three days afterwards. No symptoms of importance resulted until the seventh day after the first administration, when one of the rabbits died. After death, the diaphragm and the serous coat of the intestine were of an intensely red color. Exudations had occurred from the mucous membrane, on which numberless trichine with their embryos were found. Leuckart and Claus then traced the embryos on the peritoneal coat, (the smooth, serous lining of the bowels and abdomen,) having therefore forced through the intestine, and many were also found in the pleural cavities. Leuckart also traced the parasites in the red spots on the peritoneum, (the same smooth coat,) which evidently indicates the parts where the parasites were burrowing. In the pig thousands of trichinæ may exist without affecting the animal's health; though commonly, at the period of migration from the alimentary canal to the muscular system, there is diarrhoea, lassitude, and a general feverish state. These symptoms may be so severe as to kill, or may pass off; and either the animal lives on with trichinæ in its flesh, which afterwards die and cretify, (become chalky,) or within a fortnight or a month there is evidence of pain, stiffness in movements, languor, debility, and death."

We here see the cause which makes these worms fatal. Their existence is not new or strange; but when introduced in large numbers, their rapid propagation and passage through the bowels and peritoneum cause death. The numbers that may exist in a single ounce of infected meat are seen from this extract. We suppose, therefore, that the fatal cases reported by our consul, and which have made the disease so notorious, arose from a hog being exceedingly affected by them, and yet living in apparently good health.

In the city of Washington, these trichinæ have recently been found in rats, occupying old pork-houses. And from Detroit we have the following account of the death of a German girl:

"There has been a case in Detroit of a girl from Germany, who died with the trichina. Coming over to this country, she ate Bologna sausage, and after her arrival was taken very ill. Dr. Kiefer, a German, who attended her, could not tell what was the matter with her, but suspected that it was this disease. After her death he examined her, and found that she was alive with these worms. Each worm is enclosed in an egg, and after it is admitted into the stomach, the egg by coming in contact with the gastric juices dissolves, and the worm roams

at pleasure. Each worm in twenty-four hours makes a thousand more. This Dr. Kiefer cut out small pieces from her chest and gave to each of the other doctors. If you look through a microscope glass you can see these worms distinctly. They are not visible to the naked eye. Her sister and mother both died the same way."

Since writing the foregoing, we have received the following letter from Dr. Kiefer, the attending physician in this case:

"DETROIT, March 13, 1866.

"DEAR SIR: Assistant Postmaster Smith sent me your letter, written by you to Mr. Howard, with the request to answer it in the absence of Mr. Howard. As the attending physician of the case of *Trichiniasis* referred to, I have to state, that the talk about eating 'Bologna sausage' is without foundation. The woman who died with this sickness had lived here for about four months, having left Germany in the end of June last. The sickness exists in that part of Germany; still no cases were known in the same place where she came from. In about a month we will have information if any cases happened in her family in the old country. Besides, it is not probable at all that she should have brought her sickness with her, as the time she lived here before taken sick is too long to justify such an opinion. The lady in the house where she lived here is sick with the same symptoms, but not so severe; she was not in Germany, and has eaten no imported 'Bologna sausages.'

"Other cases have been reported from Buffalo and St. Louis, and there is no doubt, in my opinion, that *trichina spiralis* exists, and existed always where hogs exist. For particulars about the case under my treatment I refer you to the Detroit Medical Review, a journal to appear this month, when Mr. Howard will send you a copy.

"Very respectfully, yours,

"HERMAM KIEFER, M. D."

We thank Mr. Kiefer for his prompt reply to our inquiries. And, whilst our present knowledge of this case seems to point to an American origin, it is by no means clear that it is not German. We, as yet, know too little of the disease to determine how long trichina may continue propagating in the human system before a fatal sickness is developed; nor can we tell but that the case of the woman mentioned by him may have originated from the trichina of the German girl. We know that the human family derive the tape-worm of the dog (*taenia echinococcus*) from that animal, and that from other animals other entozoa find a lodgement in the human body. Most strange are the modes of this transfer, and until we know more of the trichina, we cannot determine the precise origin of any case, without it is found in the food consumed by the diseased person. This has not been done in the Detroit cases. But, admitting their American origin, we agree with Dr. Kiefer, that the trichina has always existed here, as much as it does now, and we are certain that pork can be eaten as safely now as it could at any previous period. The microscope is showing us that animals are as full of parasites as the water we drink is full of animalculæ.

But our present knowledge of these worms imposes on the American farmer a new duty in their destruction, and, therefore, we suggest to him a remedy against the *trichina*.

*The remedy.*—Every farmer knows how subject hogs are to intestinal worms of as large a growth as those infesting the human family. Even these large ones eat their way through the intestines, and live on the fat of the animal. We have, in killing hogs, found them sticking half inside and half outside the entrails. It was this disgusting sight that led us to extirpate them by mixing copperas with the salt we gave our hogs.

We have no doubt of the efficacy of this treatment as a destroyer of the trichina, and if to these benefits it should be proven to be a preventive of hog cholera, the use of copperas should be omitted by no one. Certain it is, that we were a hundred-fold compensated for the small cost and trouble in using it as we did, by the destruction of the large intestinal worms so commonly found in our hogs.

It is doubtless true that intestinal worms are propagated more readily when farm stock is raised in large numbers by the same person, or fed on unusual food. Both conditions produce an unhealthy state, and there rests upon the farmer the duty of greater care in proportion to the number he raises. The unnatural crowding of a great number of hogs in the distillery at Aurora, Indiana, and the still-slop with which they were fed, produced the disease known as hog cholera. Morbid and poisonous secretions are created, which have the power of self-propagation. A morbid condition is favorable to the production of intestinal worms; and in greater care as to the food used to cleanliness and to ventilation, and to the use of preventive remedies, must the American farmer look, if he hopes to maintain a profitable demand for the stock, used as human food, which he raises.

*Trichinæ in American pork.*—The following report from the Chicago Academy of Sciences has been received after this number of our report was placed in type. We nevertheless insert it here, that the farmers may see that *trichinæ* are in American hogs, and that the course we have recommended to destroy this parasite is now imperatively demanded of them, should the use of copperas prove a destroyer of the *trichinæ*. Experiments should be instituted by agricultural associations and agricultural colleges to ascertain a certain preventive.

#### TRICHINÆ IN PORK.

##### *Investigations by the Chicago Academy of Sciences.*

The Chicago papers publish a report of a committee of the Academy of Sciences of that city, which was appointed to determine the question whether the disease was to be found in animals slaughtered in that city. The document makes these important statements :

#### TRICHINÆ IN WESTERN PORK.

Your committee have conceived that the object for which they were appointed is two-fold—first, to ascertain whether *trichinæ* actually exist in the hogs of this country, and in those of the northwest in particular; and, secondly, should they exist, to determine the extent of the danger thereby incurred, and to ascertain the best means of averting it. For the attainment of the first-mentioned object they have, with the assistance of the gentlemen named at the head of this report, procured and examined portions of muscle taken from 1,394 hogs in the different packing-houses and butcher-shops of our city. The results of

these examinations have been engrossed in the tables herewith presented. The first of these shows the number of specimens, and in most cases the names of the muscles examined by each observer, with the number of trichinous specimens found by each. The second gives various data concerning the twenty-eight trichinous specimens found, which are numbered in the order of their discovery, and are preserved in the cabinet of the academy.

*Specimens examined.*

Examiner.	Pharyngeal.	Diaphragm.	Abdominal.	Intercostals.	Lumbars.	Spinals.	Various.	Totals.	Trichinous specimens.
Dr. Johnson-----	1	7	-----	-----	15	224	24	321	13
Dr. Shuman-----	17	9	30	37	-----	35	2	130	2
Dr. Nickerson-----	-----	-----	10	9	-----	107	124	250	3
Dr. Jewell-----	-----	-----	-----	-----	-----	212	212	212	3
Dr. Hollister-----	-----	-----	-----	-----	-----	70	70	70	2
Dr. Nelson-----	-----	-----	-----	-----	-----	50	50	50	1
Drs. Blaney and Hay-----	4	9	8	-----	-----	10	3	34	-----
Dr. Nason-----	-----	-----	9	7	-----	31	-----	47	-----
Dr. Andrews-----	-----	-----	-----	-----	-----	96	96	96	1
Dr. Lyman-----	-----	-----	-----	-----	-----	90	90	90	1
Dr. Stimpson-----	6	8	-----	-----	16	61	3	94	2
								1,394	28

*Number of parasites discovered.*

No.	Observer.	Muscle.	No. to a cubic inch.
1	Dr. Johnson-----	Spinal -----	350
2	Dr. Johnson-----	Spinal -----	300
3	Dr. Johnson -----	Spinal -----	200
4	Dr. Johnson-----	Intercostal -----	100
5	Dr. Johnson-----	Intercostal -----	500
6	Dr. Johnson-----	Spinal -----	600
7	Dr. Johnson-----	Abdominal -----	3,000
8	Dr. Johnson-----	Spinal -----	500
9	Dr. Johnson-----	Spinal -----	1,000
10	Dr. Stimpson-----	Spinal -----	18,000
11	Dr. Johnson-----	Spinal -----	15,000
12	Dr. Johnson-----	Spinal -----	300
13	Dr. Johnson-----	Spinal -----	300
14	Dr. Johnson-----	Spinal -----	300
15	Dr. Stimpson-----	Spinal -----	400
16	Dr. Nickerson-----	Unknown -----	48
17	Dr. Nickerson-----	Unknown -----	80
18	Dr. Nickerson-----	Unknown -----	192
19	Dr. Sherman-----	Unknown -----	3,000
20	Dr. Sherman-----	Pharyngeal -----	6,000
21	Dr. Andrews-----	Abdominal -----	2,000
22	Dr. Nelson-----	Spinal -----	2,000
23	Dr. Lyman-----	Unknown -----	16,000
24	Dr. Hollister-----	Unknown -----	500
25	Dr. Hollister-----	Unknown -----	500
26	Dr. Jewell-----	Unknown -----	2,000
27	Dr. Jewell-----	Unknown -----	250
28	Dr. Jewell-----	Unknown -----	500

By these tables it will be perceived that we have found trichinæ in the muscles of twenty-eight hogs out of the 1,394 examined. We may therefore conclude that in the hogs brought to Chicago one in fifty is affected with trichiniasis, in a greater or less degree. We must confess our surprise at arriving at this result, which indicates, with little doubt, the startling fact that trichiniasis in pork is even more common in this country than in Germany, where it caused so much suffering and death. For instance, in the city of Brunswick, where a most careful inspection of 19,747 hogs was made in the years 1864-'65, only two were found to contain trichinæ in their muscles, the proportion being one to ten thousand against one to fifty, as before stated, in our country. The comparative immunity from disease which our own people have enjoyed undoubtedly results from our habit of cooking meat before eating it, while in Germany it is eaten raw by the poorer classes on account of the high price of fuel.

It will be also observed, by consulting these tables, that the specimens examined show great variation in the number of the worms infesting them. We have given, indeed, only an approximation to the number existing in a cubic inch in each specimen of muscle, but this approximation is sufficiently near the truth for our present purposes. Our method has been to count the trichinæ occurring in the several different portions of muscle, each a cubic tenth of an inch in size, and to multiply the average number by one thousand to find the number to a cubic inch. By this method we find that only three of our specimens (Nos. 10, 11, and 23) contain over ten thousand to the cubic inch, and are, therefore, as densely infested with the worms as the pork which has occasioned the disasters in Germany. The remaining twenty-five are infested in a comparatively slight degree, viz: from forty-eight to six thousand to the cubic inch. The specimen most thickly infested contains eighteen thousand to the cubic inch, and we have calculated that a person eating an ordinary meal of this pork in a raw state would speedily become a victim to the ravages of not less than a million of young trichinae. In certain cases of death from trichiniasis the number found in the muscles of man has been two millions.

With regard to the muscles of the hog most liable to be infested, we have to state that our determinations do not accord with those of European observers, inasmuch as more than half of our trichinous specimens have been taken from the spinal muscles.

#### HOW TO GUARD AGAINST THE EVIL.

Now that the existence of trichinæ in our pork has been established beyond a doubt, it will be proper for us to point out all known means of defence against its ravages. First, with regard to the rearing of hogs. These animals undoubtedly become infested through the eating of flesh of some kind, since no trichinæ, nor germs of trichinæ, have ever been found in any vegetable food. A strict attention to the feeding of hogs, and their confinement in pens where no animal food is accessible, is an infallible preventive against trichiniasis in them. Such management is all the more necessary, since European authorities agree that it is impossible to diagnose the disease in the animal from external appearances, and no culpability can therefore attach to the farmer for selling hogs which prove to be affected with trichinæ.

In regard to pork the origin of which is doubtful, the use of the microscope is primarily indicated. With this instrument only can we ascertain with certainty whether the muscles of the hogs are free from the parasite. The general use of the instrument is, however, impracticable, unless a system of microscopic inspection be adopted here, as in Europe, at the great packing establishments. But we have in our power much more simple means of insuring safety in the consumption of pork. It is simply necessary to cook it thoroughly, so that every portion of the meat shall have experienced a temperature of at least 160 degrees

Fahrenheit. We cannot insist too strongly upon this point. Again, by properly salting and smoking the meat for a period of at least ten days, the trichinæ, should they exist, will be certainly killed. Simple desiccation of the meat, if continued for a period of sufficient length, will also kill them. They will never be found alive in old hams, for instance. On the other hand, mere pickling appears to have very little effect upon these worms.

Trichinæ have doubtless always existed in muscles of the hog, although probably not to the same extent as at present. And trichiniasis in man may have existed to a considerable extent in this country before its nature and cause became known. Some of the members of your committee can recall cases of obscure disease which have come to their knowledge in past years, which may have been owing to the presence of trichinæ.

#### THE TRICHINÆ PANIC.

Having now fully exposed the exact extent of the danger from trichinous pork to which our people are liable, and stated the means of avoiding it, we will proceed to close our report with a few remarks upon the economical aspects of the subject. A panic has been produced in the mind of our public by the news which has reached us from Germany concerning the disasters which have occasionally followed the consumption of pork in a raw state. The excitement has, with little doubt, been fostered by interested persons for speculative purposes, until people have come to imagine that there is danger in eating pork of any kind—a danger all the more terrible because hidden, little understood, and undiscoverable by ordinary means. *All this excitement has occurred before a single instance of the occurrence of trichinæ in American hogs has been, as far as we are aware, authentically reported.* It has, therefore, become necessary that the subject should be thoroughly investigated, in order that the people, by familiarity with the danger, and confidence in their understanding of its character, may not be the prey of superstitious fears. *The panic which now prevails is unfounded in reason, senseless and greatly injurious.* We do not allude to the commercial aspects of the question, a matter of small moment compared with the great importance of pork, as the kind of meat diet upon which nine-tenths of our agricultural population, north and south, mainly depend. In our view it would be folly to discard this kind of meat from our list of articles of food when all possibility of injury attending its use may be avoided by the most simple means. Let the people but understand that only one hog in forty-eight contains trichinæ at all; that only one in three hundred contains them in sufficient numbers to cause considerable danger; and that even in these cases the worms are rendered innocuous by proper smoking, drying, or cooking, and we imagine that few sensible persons will refuse pork as food if it suits their convenience to use it.

E. ANDREWS, M. D.

J. V. Z. BLANEY, M. D.

HOSMER A. JOHNSON, M. D.

WILLIAM STIMPSON, M. D.,

*Secretary.*

#### THE PRESERVATION OF TIMBER.

Every farmer has always lamented the fact that a great part of his labor is necessarily given to keeping his fences from dilapidation. It is this unprofitable work that makes agriculture a less lucrative pursuit than other occupations. Posts and rails decay almost as fast as the profits of the farm will permit their

renewal. Every five or six years a rail-fence must be thrown down and reset, that the change of the crossing may make them last longer. Yet there has never been a series of experiments carefully and extensively made to determine the best modes of preserving timber by the time and manner of their cutting, or by applications to protect posts and exposed timbers from decay. One of the most useful duties of our agricultural colleges will be in making these experiments.

Our attention has been called to this important subject in reading an article in a newspaper, headed "Old Ships." The first of these mentioned is the Princess Mary, built on the Thames, England, in the early part of the 17th century, and famous as being the vessel which brought Mary and William, of Orange, over from Holland into Great Britain in 1688. That vessel remained good until 1827, when it was lost by being wrecked. In connexion with the old ships named in this article these facts are stated :

"The Sovereign (an old vessel) was built in 1637, and when repaired in 1684, forty-seven years after, her timber was so hard that it was difficult to work it. It was the practice in the north of England to bark timber standing, and in Staffordshire especially, and let it remain in that state for a time to season. The Achilles was built by contract in 1757 of timber barked in the spring and felled the next winter. She was docked in 1770 and found exceedingly sound, and was sold in 1784 because too small for a line-of-battle-ship. The Hawke (sloop) was built half of timber barked in 1787 and felled in 1790, and half of timber felled in the usual way, from the same soil and neighborhood. In 1803 she was taken to pieces, and both sides were found equally decayed."

There is great difficulty in determining the precise results of experiments made on the durability of timber. There is much difference in individual trees standing near each other, and of the same kind. There is still greater difference in trees grown on poor ridges and in rich bottom lands. But still experiments could determine the value of different modes of preparing the timber for special purposes.

Of the experiment given in the above account of old ships we have tested its practical utility to a certain extent. Having purchased an old dilapidated farm, on which some of the fences had not been repaired for thirty years, we found that of the rails in them the kind in best preservation was hickory. White oak rails had become very light, but some of the hickory were scarcely affected at all, whilst in others the sap was entirely rotted. Of the sound hickory some were shell-bark, but most were red hickory. Of the sound rails many had the sap-wood in excellent preservation—these had had the bark stripped. All hickory rails unstripped had their sap-wood entirely destroyed.

We acted on these facts, and where we could do so, made hickory rails in the spring when the sap was in lively flow, stripping the bark from each of the rails as fast as they were made, and piling them closely to prevent their warping. These rails now, ten years after making, show no signs of decay in the sap-wood, and are as hard, perhaps more so, than the heart-wood. But hickory rails made in the winter, and the bark adhering, rotted in the sap-wood in two years.

Every farmer knows how quickly the sap-wood rots. Sap-wood is gradually changed to heart-wood by the force of pressure and of growth. The outer layers seem to press upon the interior ones, causing them to contract by lessening the size of the pores. These pores, too, are gradually closed by cell-growth. The wood is more solid, and less of air can penetrate them. The sap almost ceases to circulate in them. But in the sap-wood this circulation is undiminished. In the spring when the sap, then almost nothing but water, ascends, it is fluid; but having been acted upon in the leaf, which absorbs carbonic acid, and exhales the water of the sap, it descends thicker, and is retained in the cells or pores, forming cell or wood growth.

By stripping the bark in the spring the sap, in its ascent, is exhaled or flows from the pores, and no elaborated or descending sap is formed. Now, this deposit of the descending sap appears to have a great affinity for oxygen, which exists in the air, and is that part of it which destroys all things that are of vegetable or animal growth after death. Timber that is stripped of its bark having but little of this downward sap, the wood seasons to complete hardness, and is not destroyed by the oxygen, because it is not taken up by an absorbent, such as the descending sap appears to be.

It is well known that wood always under water never rots, because the air is excluded from it; and posts rot most rapidly at the surface of the ground, where the air penetrates into the pores, and aided by moisture which hastens decomposition. To fill up the pores of the wood with a substance antagonistical to the oxygen of the atmosphere, and which will not dissolve in water readily, must be preservative. A substance having these properties, and which will solidify or harden the wood itself, is best of all others. Pyroligneous acid—an acid procured by the distillation of wood—gas tar, and other substances are used, but we know of no series of experiments having been made to determine their relative value, and of the manner and times of their application.

Individual experiments have often been made, but the years that must elapse before they can be tested so often removes those who have made them from the place where they are made, that nothing is heard of the result. But we hope, through our regular correspondents, to glean some reliable information respecting them, and we desire they will make inquiries about them, as we purpose hereafter to make some interrogatories in our circulars on this subject. And should any person have made such experiments, we hope he will advise the Commissioner of Agriculture of the result, and thus aid in lessening one of the heaviest expenses to which the farmer is subject.

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## CANADIAN RECIPROCITY TREATY.

Canadian delegates were present in this city to negotiate another treaty of reciprocity. So far as we have seen, the basis of their proposition was to allow the importation of some manufactures free of duty from the United States into the Canadas. The Committee of Ways and Means would not concur in their

proposition, and the delegation has returned to Canada. The authorities of the provinces have given notice that the American fishermen will not be permitted to fish in British waters. On our part, Mr. Morrill has introduced a bill into the House of Representatives imposing duties upon nearly all imports from Canada, but to continue the reciprocal use of the lakes, canals, rivers, and fishing grounds of the two countries, as provided for under the existing reciprocity treaty, and admitting the transportation of foreign goods through the territory of one country into that of the other. But this measure has been defeated.

In condemnation of the course of this country and of Congress for not continuing the former treaty, the *United States Economist* bitterly censures the majority in Congress by declaring that "narrow protectionist jealousies have blinded them to the fact that we have been doing a most valuable trade with the provinces which we can ill afford to throw away, and that the numerous interests threatened by the abrogation of the treaty begin to cry aloud, now that the day of suspension draws nigh, and the abrogationists are learning from these complaints the egregiousness of their folly." It follows this condemnation with a statement of the imports and exports from and to the provinces to show the total of the trade prior to and since the treaty, now abrogated, was executed.

We have shown, heretofore, the deceptions character of these tables, by reason of the different basis of valuation on our exports into the Canadas, and their imports from us. Nothing need be added on that point. But the following statistics, given by the London (Canada) *Free Press*, show the operation of that treaty upon the agriculture of this country, an interest not crying aloud against the abrogationists, but demanding and sustaining the action of our government.

That paper says:

"The importance of the export trade of Canada, stimulated by the reciprocity treaty, has been underestimated even by the people directly interested. From the last half-yearly trade returns it appears that there were exported from Canada, *in six months*, 15,000 horses, 103,810 horned cattle, 158,000 sheep; the total value of this class of exports being \$7,923,355. Of wheat, grain, and other agricultural produce, the value of the exports was \$11,954,878, the most of which went to the United States. The total exports for the half year were \$33,655,463, being an increase over the corresponding year of more than \$10,000,000, arising, for the most part, from the excellent harvest, though combined with higher prices than usual."

In the January number of these reports we showed that the Canadas had reaped the harvest of high prices occasioned by our war expenditures and the condition of our currency, without incurring the taxes and military duties which the American farmer endured in the prosecution of the war. The above statistics prove the correctness of this showing.

A more gross injustice to the American farmer than the Canadian treaty could scarcely be conceived. It was a selling of him for a fishery and a New York transportation. Now these two interests may as well understand that they can make any equitable exchange with the provinces of their interests with a like Canadian interest, or of any other that is local to them, and which the parties

to be affected by it may agree upon. But when it comes to this, that American agriculture, especially that of the west and northwest, is to be sold for eastern fisheries and transportation, then so great a crime against it will be punished. Once more we thank God that this agriculture is now a power in the United States, and as ready as it is able to vindicate its own rights, and redress the wrongs committed against it.

## INTERNAL REVENUE.

The following compilation of the internal revenue collected in 1863, 1864, and 1865, we take from the *United States Economist*:

As the statistical division of this department is never furnished the reports from other departments, we must rely upon the newspapers taken by it for its statistical information.

Articles and occupation.	1863.	1864.	1865.
Received from—			
Manufactures and productions .....	\$24,403,091 34	\$75,461,278 00	\$104,379,609 56
Slaughtered animals .....	710,812 57	698,549 73	1,261,357 09
Gross receipts .....	1,340,271 82	2,902,863 90	8,891,874 13
Sales .....	64,003 87	141,231 58	4,062,243 54
Licenses .....	6,824,178 42	7,178,205 26	12,613,478 67
Income .....	455,741 26	14,933,362 32	20,740,451 33
Legacies and successions .....	56,592 61	311,161 02	546,703 17
Articles in schedule A .....	365,630 93	696,878 43	780,266 53
Passports, &c. .....	8,406 00	11,001 00	29,538 29
Special income tax .....			28,929,312 02
Penalties, &c .....	27,170 14	185,224 94	517,627 41
Banks, railroad companies, &c .....	1,910,936 97	7,017,547 03	14,385,606 63
Salaries .....	696,181 71	1,705,124 63	2,826,333 37
Stamps .....	4,140,175 29	5,894,945 14	11,162,392 14
United States marshals .....		408 32	2,735 29
Solicitor of the Treasury .....		7,967 22	
Total .....	41,003,192 93	117,145,748 52	211,129,529 17

The following table shows in detail the amounts paid by particular kinds of manufactures :

Boots and shoes .....	\$3,280,627	India-rubber .....	\$635,975
Carriages and other vehicles .....	880,021	Iron manufactures .....	8,494,990
Cigars .....	3,072,476	Leather and manufactures of it .....	4,337,265
Clothing .....	6,820,936	Petroleum .....	3,180,758
Coal .....	835,993	Paper .....	1,082,475
Confectionery .....	569,473	Soap .....	791,415
Cotton manufactures ..	6,747,923	Steam-engines .....	772,360
Cotton, raw .....	1,772,983	Steel and its manufactures .....	
Distilled spirits .....	15,995,701	tures .....	723,817
Fermented liquors .....	3,657,181	Sugar .....	2,044,401
Furs .....	2,733,247	Thread, yarn, &c. ....	583,225
Gas .....	1,348,324	Tobacco .....	8,017,018
Glass .....	585,429	Woollen manufactures .....	7,947,094

Commenting on this exhibit of the taxes paid by manufactures and productions, the *Economist* remarks :

"The \$104,000,000 of taxes collected upon manufactures and products is drawn from about \$1,700,000,000 of goods. Upon goods thus taxed *not only has the duty to be added, but also the dealer's profit upon the duty*, through at least four successive hands, before the products reach the consumer; so that the consumer has, on the average, to pay 10 to 12 per cent. more for the goods than if they were free from taxation. This \$104,000,000 of taxes upon products, therefore really represents about \$200,000,000 of extra price which consumers have to pay upon the goods taxed. This serious addition to the cost of products cannot fail to have the effect of limiting the consumption of commodities very largely."

The *Economist* is a very able paper, devoted to the commercial interests, but very fair in its general views of the manufacturing and agricultural interests. Here is an admission that whilst the manufacturer advances the tax laid upon his products, the consumer repays him not only the amount advanced, but ten to twelve per cent. as a profit on such advancement. If this be true—and it may be set down as generally so—then, most assuredly, the manufacturer has no cause of complaint. He is repaid the taxes advanced by him, with ten per cent. interest. But the consumer has cause of complaint, that he should be subjected to this per cent.; and to lessen it, we have heretofore advocated that the tax should be laid as near the consumer as possible.

But it is said that these taxes and per cent. upon their advance cannot fail to limit the consumption of commodities very largely.

Will the *Economist* allow the imports to answer this allegation?

Here they are as given by the *Journal of Commerce*, N. Y.,

*Import of foreign dry goods at New York for two months, from January 1.*

ENTERED FOR CONSUMPTION.

	1865.	1866.
Manufactures of wool .....	\$1,444,534	\$8,338,729
Manufactures of cotton .....	550,412	4,379,529
Manufactures of silk .....	571,016	4,914,641
Manufactures of flax .....	951,902	3,374,732
Miscellaneous dry goods .....	281,598	1,710,317
Total entered .....	3,799,462	22,717,948
Withdrawn from warehouse .....	3,075,845	7,014,512
Total for consumption .....	6,875,307	29,732,460

Here we see an import about  $4\frac{1}{3}$  times greater in January and February, 1866, than during the same months in 1865. Even the *Journal of Commerce*, devoted as it is to free trade, designates these imports as "extraordinary receipts," and an "enormous increase."

## AMOUNT IN TENTHS, AND PRICES OF FARM STOCK IN JANUARY, 1865, AND FEBRUARY, 1866.

TABLE 1.—*Showing the amount, in tenths, of the farm stock of the States named, in January, 1865, compared with the amount in January, 1864, and the prices of the same in January, 1865, for the different ages; and the amount and prices of the same in February, 1866, compared with those of January, 1865.*

States.	HORSES.											
	Average number of horses compared with that of January, 1864.	Average number of horses compared with that of February, 1865.	Average price per head of same under 1 year old, 1865.	Average price per head of same under 1 year old, 1866.	Average price per head of same between 1 and 2 years old, 1865.	Average price per head of same between 1 and 2 years old, 1866.	Average price per head of same between 2 and 3 years old, 1865.	Average price per head of same between 2 and 3 years old, 1866.	Average price per head of same over 3 years old, 1865.	Average price per head of same over 3 years old, 1866.		
Maine.....	9 $\frac{1}{4}$	9 $\frac{4}{5}$	\$34 72	\$39 71	\$54 50	\$62 50	\$80 22	\$83 61	\$112 25	\$126 64		
New Hampshire.....	9	10 $\frac{1}{10}$	28 89	31 00	48 30	49 44	69 00	69 55	101 70	99 44		
Vermont.....	9 $\frac{1}{9}$	9 $\frac{1}{7}$	34 33	32 00	56 33	52 85	77 33	79 00	111 11	118 00		
Massachusetts.....	9 $\frac{3}{10}$	10	38 33	34 70	55 22	51 70	76 66	82 50	111 70	123 36		
Rhode Island.....	9 $\frac{2}{3}$	9 $\frac{2}{5}$	33 33	43 33	58 00	70 00	88 33	93 33	111 67	125 00		
Connecticut.....	10	11	35 60	36 25	58 40	62 50	84 00	88 75	119 00	117 50		
New York.....	8 $\frac{9}{11}$	10	38 11	41 00	64 44	67 90	92 65	97 26	122 00	135 71		
New Jersey.....	9 $\frac{1}{2}$	10 $\frac{1}{5}$	49 58	58 00	80 83	89 00	115 41	120 70	142 29	169 66		
Pennsylvania.....	9 $\frac{1}{3}$	10 $\frac{3}{8}$	40 19	43 00	67 02	68 58	97 70	101 35	113 51	139 66		
Maryland.....	9	10 $\frac{1}{4}$	37 34	41 45	58 84	64 50	80 84	93 00	125 81	129 00		
Delaware.....	8 $\frac{1}{4}$	11	35 00	40 00	54 00	60 00	77 00	80 00	120 50	120 00		
Kentucky.....	7 $\frac{2}{3}$	10	41 25	40 00	58 95	59 33	78 95	83 75	105 00	104 15		
Ohio.....	8 $\frac{5}{6}$	10	33 78	34 00	53 96	54 25	78 00	77 50	107 57	110 00		
Michigan.....	10 $\frac{1}{2}$	10 $\frac{1}{2}$	36 96	37 87	58 75	62 00	88 27	91 40	121 75	134 55		
Indiana.....	9 $\frac{3}{10}$	10 $\frac{1}{3}$	36 12	35 00	57 78	56 00	81 60	77 00	113 13	105 00		
Illinois.....	9 $\frac{4}{7}$	10 $\frac{3}{7}$	38 43	38 91	60 00	59 95	87 65	83 00	117 39	114 67		
Missouri.....	8	10 $\frac{4}{5}$	38 50	37 52	57 74	57 50	85 76	77 62	107 00	104 25		
Wisconsin.....	10 $\frac{1}{2}$	11 $\frac{1}{3}$	36 14	46 00	54 77	74 00	84 44	106 00	115 86	146 00		
Iowa.....	10 $\frac{2}{3}$	11 $\frac{1}{9}$	41 28	41 00	61 65	62 25	90 93	94 84	121 87	119 78		
Minnesota.....	12	12 $\frac{2}{3}$	41 47	44 55	66 52	81 46	89 94	112 29	120 00	149 92		
Kansas.....	11 $\frac{1}{6}$	11 $\frac{1}{3}$	33 00	35 47	53 61	53 52	85 00	78 76	115 83	109 00		
West Virginia.....	8 $\frac{4}{5}$	11 $\frac{1}{2}$	37 00	36 00	57 00	53 16	79 00	74 00	104 54	100 25		
Nebraska Ter'ry.....	13 $\frac{1}{2}$	11 $\frac{8}{11}$	39 54	43 33	64 54	67 00	92 72	94 95	120 91	130 50		

TABLE 1.—*Showing the amount, in tenths, of farm stock, &c.—Continued.*

States.	MULES.											
	Average number of mules compared with that of January, 1861.	Average number of mules compared with that of February, 1865.	Average price per head of same under 1 year old, 1865.	Average price per head of same under 1 year old, 1866.	Average price per head of same between 1 and 2 years old, 1865.	Average price per head of same between 1 and 2 years old, 1866.	Average price per head of same between 2 and 3 years old, 1865.	Average price per head of same between 2 and 3 years old, 1866.	Average price per head of same over 3 years old, 1865.	Average price per head of same over 3 years old, 1866.		
Maine .....	11 $\frac{1}{2}$	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Hampshire .....	9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Vermont .....	11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Massachusetts .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rhode Island .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Connecticut .....	12	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New York .....	10 $\frac{4}{5}$	12	\$44 11	\$51 16	\$76 61	\$82 11	\$111 77	\$116 00	\$151 50	\$141 60	.....	.....
New Jersey .....	10	11	48 54	50 62	78 73	87 50	115 64	135 50	152 77	174 33	.....	.....
Pennsylvania ..	10 $\frac{1}{2}$	12 $\frac{7}{11}$	47 22	48 74	81 00	75 60	125 35	119 93	158 37	155 00	.....	.....
Maryland .....	10	11	43 14	48 66	68 57	76 00	100 50	110 00	152 00	146 20	.....	.....
Delaware .....	9	10	.....	.....	.....	.....	80 00	.....	.....	100 00	.....	.....
Kentucky .....	8	8 $\frac{2}{3}$	55 63	53 00	78 91	78 25	110 20	111 00	130 87	137 00	.....	.....
Ohio .....	9	11	47 38	42 50	76 00	69 00	109 11	101 00	141 51	134 50	.....	.....
Michigan .....	11 $\frac{1}{2}$	11 $\frac{1}{2}$	45 41	47 33	72 72	78 00	106 36	115 62	147 79	153 15	.....	.....
Indiana .....	9 $\frac{1}{2}$	11 $\frac{1}{2}$	47 26	46 10	76 00	71 00	105 00	96 50	138 16	121 00	.....	.....
Illinois .....	10	10 $\frac{1}{2}$	51 70	49 69	67 73	76 86	113 00	107 80	148 00	134 00	.....	.....
Missouri .....	7 $\frac{3}{4}$	10 $\frac{1}{2}$	52 73	49 50	72 00	73 19	112 00	102 00	145 36	132 25	.....	.....
Wisconsin .....	11 $\frac{1}{4}$	11 $\frac{1}{2}$	53 42	52 08	79 00	84 66	112 25	121 66	148 73	160 33	.....	.....
Iowa .....	10	11 $\frac{1}{2}$	53 47	53 12	79 06	82 38	112 65	118 60	153 00	156 76	.....	.....
Minnesota .....	11	12	53 62	60 72	76 87	91 90	117 50	126 00	158 00	162 68	.....	.....
Kansas .....	11	11	51 93	43 00	77 93	67 33	114 11	95 46	161 75	137 00	.....	.....
West Virginia ..	8 $\frac{7}{10}$	10 $\frac{1}{2}$	42 00	40 00	63 00	60 00	90 00	84 00	123 00	114 00	.....	.....
Nebraska Ter ..	13 $\frac{3}{10}$	11	60 28	60 62	88 43	90 71	136 00	128 12	167 22	162 44	.....	.....

TABLE 1.—*Showing the amount, in tenths, of farm stock, &c.—Continued.*

States.	CATTLE AND OXEN.											
	Average number of cattle and oxen compared with that of January, 1864.	Average number of cattle and oxen compared with that of February, 1865.	Average price per head of same under 1 year old, 1865.	Average price per head of same under 1 year old, 1866.	Average price per head of same between 1 and 2 years old, 1865.	Average price per head of same between 1 and 2 years old, 1866.	Average price per head of same between 2 and 3 years old, 1865.	Average price per head of same between 2 and 3 years old, 1866.	Average price per head of same over 3 years old, 1865.	Average price per head of same over 3 years old, 1866.		
Maine.....	8 <sup>2</sup> <sub>1</sub>	9	\$12 11	\$14 78	\$23 94	\$26 43	\$37 27	\$44 28	\$68 19	\$79 00		
New Hampshire.....	8	9 <sup>4</sup> <sub>9</sub>	11 10	12 88	20 40	24 00	34 00	38 48	67 00	76 22		
Vermont.....	8	9 <sup>3</sup> <sub>7</sub>	9 78	12 00	21 44	27 00	39 33	46 28	70 00	83 43		
Massachusetts.....	9	9 <sup>1</sup> <sub>2</sub>	12 50	14 63	24 50	26 00	40 75	41 36	68 75	66 66		
Rhode Island.....	10	9 <sup>4</sup> <sub>3</sub>	12 33	20 00	22 67	28 33	38 33	42 33	63 33	85 00		
Connecticut.....	9 <sup>1</sup> <sub>9</sub>	10 <sup>1</sup> <sub>2</sub>	10 00	15 00	20 40	29 50	38 00	46 50	68 00	71 25		
New York.....	8 <sup>8</sup> <sub>4</sub>	9 <sup>1</sup> <sub>3</sub>	11 58	14 64	21 41	26 76	35 83	43 39	62 00	68 90		
New Jersey.....	8 <sup>3</sup> <sub>4</sub>	10 <sup>1</sup> <sub>15</sub>	14 45	20 00	23 08	34 33	35 21	54 00	63 58	80 00		
Pennsylvania.....	9	9 <sup>5</sup> <sub>7</sub>	11 42	14 29	19 71	23 70	31 48	37 74	49 24	57 52		
Maryland.....	8 <sup>10</sup> <sub>8</sub>	9 <sup>9</sup> <sub>11</sub>	9 92	11 25	16 54	19 00	26 61	26 33	42 30	42 00		
Delaware.....	7 <sup>4</sup> <sub>4</sub>	11	10 50	20 00	20 00	30 00	35 00	45 00	48 00	60 00		
Kentucky.....	8 <sup>1</sup> <sub>2</sub>	9 <sup>1</sup> <sub>2</sub>	10 33	11 00	20 20	20 00	34 33	31 00	52 12	51 00		
Ohio.....	8 <sup>2</sup> <sub>3</sub>	9 <sup>1</sup> <sub>4</sub>	9 44	12 00	17 41	21 66	28 87	36 00	45 71	54 00		
Michigan.....	9	9	7 83	10 00	15 72	19 29	27 48	33 44	49 00	63 38		
Indiana.....	8 <sup>1</sup> <sub>3</sub>	9 <sup>1</sup> <sub>5</sub>	7 89	9 50	15 10	17 14	25 14	28 33	38 68	43 50		
Illinois.....	9 <sup>2</sup> <sub>8</sub>	9 <sup>2</sup> <sub>7</sub>	7 78	8 51	14 69	15 13	23 71	24 00	38 58	36 82		
Missouri.....	7 <sup>2</sup> <sub>3</sub>	9 <sub>1</sub> <sub>2</sub>	6 22	8 00	12 36	15 34	21 00	26 12	35 70	38 24		
Wisconsin.....	9	9 <sup>2</sup> <sub>3</sub>	7 63	9 80	14 06	18 00	23 41	30 00	41 45	50 50		
Iowa.....	10	10 <sup>1</sup> <sub>6</sub>	7 91	8 00	14 72	14 52	25 17	26 28	41 82	41 60		
Minnesota.....	10 <sup>4</sup> <sub>10</sub>	10 <sup>2</sup> <sub>3</sub>	8 94	9 00	14 70	17 53	21 79	29 00	40 19	50 34		
Kansas.....	12 <sup>1</sup> <sub>9</sub>	11	8 00	9 58	15 44	16 94	27 55	28 29	45 77	42 58		
West Virginia.....	8 <sup>7</sup> <sub>10</sub>	9 <sup>1</sup> <sub>8</sub>	7 60	11 00	15 80	18 50	25 30	32 06	38 45	47 00		
Nebraska Territory.	12 <sup>1</sup> <sub>2</sub>	12	9 81	8 70	17 47	15 90	28 50	27 60	48 20	51 50		

TABLE 1.—*Showing the amount, in tenths, of farm stock, &c.—Continued.*

States.	MILCH COWS.						SHEEP.					
	Average number of milch cows compared with that of January, 1864.	Average number of milch cows compared with that of February, 1865.	Average price per head of cows, 1865.	Average price per head of cows, 1866.	Average number of sheep compared with that of January, 1864.	Average number of sheep compared with that of February, 1865.	Average price per head of same under 1 year old, 1865.	Average price per head of same under 1 year old, 1866.	Average price per head of same over 1 year old, 1865.	Average price per head of same over 1 year old, 1866.		
Maine.....	9	9 $\frac{2}{9}$	\$43 70	\$56 28	11	11 $\frac{1}{2}$	\$4 57	\$3 70	\$5 89	\$5 00		
New Hampshire.....	8 $\frac{4}{5}$	9 $\frac{5}{9}$	39 30	43 22	11 $\frac{6}{10}$	10 $\frac{1}{3}$	4 22	3 66	5 85	5 22		
Vermont.....	9 $\frac{3}{4}$	10	43 11	54 28	11 $\frac{1}{4}$	11	4 44	4 00	6 50	6 57		
Massachusetts.....	8	9 $\frac{1}{2}$	52 50	62 00	10 $\frac{4}{10}$	10 $\frac{2}{3}$	4 48	3 75	6 84	5 50		
Rhode Island.....	10	9 $\frac{2}{3}$	46 67	65 66	10	11	5 00	4 58	6 83	6 50		
Connecticut.....	10	10 $\frac{1}{4}$	40 60	53 75	10	10 $\frac{1}{2}$	4 00	4 37	6 70	6 50		
New York.....	10	10 $\frac{1}{7}$	44 31	55 14	10 $\frac{1}{5}$	11 $\frac{2}{1}$	4 26	4 00	5 93	5 36		
New Jersey.....	9 $\frac{1}{2}$	9 $\frac{11}{15}$	48 00	70 00	9	10 $\frac{1}{3}$	4 64	5 20	6 77	7 00		
Pennsylvania.....	9 $\frac{1}{8}$	10 $\frac{1}{8}$	39 22	51 18	11	11 $\frac{1}{2}$	4 07	3 53	6 15	5 36		
Maryland.....	9 $\frac{3}{10}$	9 $\frac{11}{11}$	38 00	41 25	11 $\frac{2}{3}$	10 $\frac{1}{2}$	4 95	4 33	7 71	6 33		
Delaware.....	8 $\frac{1}{2}$	10	42 50	75 00	8 $\frac{2}{4}$	10	4 50	3 50	6 50	4 50		
Kentucky.....	9	9	42 29	50 00	10 $\frac{1}{2}$	10 $\frac{1}{2}$	4 10	2 90	6 00	4 33		
Ohio.....	8 $\frac{5}{6}$	9 $\frac{1}{4}$	35 13	47 33	12 $\frac{1}{8}$	11 $\frac{1}{3}$	3 96	3 33	6 00	5 00		
Michigan.....	10	9 $\frac{1}{2}$	32 27	43 52	12 $\frac{1}{4}$	11 $\frac{1}{2}$	3 79	3 00	5 68	4 68		
Indiana.....	9	9 $\frac{1}{2}$	32 07	50 33	12 $\frac{7}{10}$	11 $\frac{1}{3}$	3 53	2 50	5 11	3 66		
Illinois.....	9 $\frac{1}{2}$	9 $\frac{1}{2}$	30 46	34 84	12 $\frac{2}{3}$	11 $\frac{6}{7}$	3 93	2 75	5 70	4 12		
Missouri.....	9	9 $\frac{2}{9}$	20 61	32 87	10 $\frac{2}{4}$	11 $\frac{1}{2}$	2 51	2 00	4 19	3 17		
Wisconsin.....	10 $\frac{1}{6}$	10 $\frac{1}{2}$	28 78	35 33	14	13	4 43	3 50	6 18	5 12		
Iowa.....	10 $\frac{2}{3}$	10 $\frac{2}{3}$	26 68	30 12	14 $\frac{1}{5}$	13 $\frac{2}{3}$	4 19	2 77	6 00	4 12		
Minnesota.....	11 $\frac{1}{2}$	11	26 35	34 92	15 $\frac{1}{4}$	14	3 98	3 39	5 64	4 50		
Kansas.....	12 $\frac{2}{9}$	12	26 66	27 94	14	13 $\frac{2}{3}$	3 78	2 66	5 56	4 18		
West Virginia.....	9	9 $\frac{2}{3}$	32 81	33 20	10 $\frac{8}{10}$	11 $\frac{1}{6}$	2 70	2 75	4 27	3 50		
Nebraska Territory.	13 $\frac{1}{4}$	12	30 63	30 45	18 $\frac{1}{8}$	14 $\frac{1}{2}$	4 37	2 62	6 68	4 11		

TABLE 1.—*Showing the amount, in tenths, of farm stock, &c.—Continued.*

States.	HOGS.					
	Average number of hogs compared with that of January, 1864.	Average number of hogs compared with that of February, 1865.	Average price of same per head under 1 year old, 1865.	Average price of same per head under 1 year old, 1866.	Average price of same per head over 1 year old, 1865.	Average price of same per head over 1 year old, 1866.
Maine.....	8 $\frac{2}{10}$	9 $\frac{1}{4}$	\$14 21	\$16 50	\$23 40	\$32 77
New Hampshire.....	7 $\frac{7}{10}$	9 $\frac{5}{9}$	15 50	17 00	30 00	33 28
Vermont.....	8 $\frac{4}{9}$	10 $\frac{1}{7}$	15 00	16 58	28 33	31 87
Massachusetts.....	8	9	14 85	18 00	31 43	36 44
Rhode Island.....	8 $\frac{1}{3}$	9 $\frac{2}{8}$	14 00	18 00	26 66	31 66
Connecticut.....	7 $\frac{4}{5}$	10	14 00	15 50	27 50	34 00
New York.....	8 $\frac{1}{2}$	9 $\frac{2}{5}$	11 90	11 60	20 82	22 54
New Jersey.....	8 $\frac{1}{5}$	10 $\frac{1}{2}$	12 58	12 70	23 00	24 50
Pennsylvania.....	8 $\frac{1}{2}$	10 $\frac{4}{5}$	9 21	9 63	20 81	19 80
Maryland.....	8 $\frac{8}{13}$	11 $\frac{1}{5}$	7 50	7 40	17 66	14 50
Delaware.....	8	10	10 50	-----	27 50	-----
Kentucky.....	8 $\frac{1}{8}$	11 $\frac{1}{5}$	5 34	5 66	11 52	12 50
Ohio.....	7 $\frac{2}{3}$	10 $\frac{1}{5}$	6 94	7 50	16 24	16 00
Michigan.....	8 $\frac{1}{2}$	9 $\frac{2}{8}$	5 26	7 00	13 23	14 78
Indiana.....	7 $\frac{6}{10}$	11 $\frac{1}{6}$	5 44	5 33	12 03	11 33
Illinois.....	8 $\frac{4}{10}$	9 $\frac{5}{7}$	6 85	7 00	14 18	13 93
Missouri.....	7	10	3 40	4 46	8 61	10 15
Wisconsin.....	8 $\frac{1}{2}$	10 $\frac{1}{2}$	6 00	7 33	13 65	15 00
Iowa.....	9	10	5 68	6 00	12 00	12 86
Minnesota.....	9 $\frac{1}{2}$	11 $\frac{5}{7}$	6 23	8 33	15 00	14 87
Kansas.....	7 $\frac{3}{16}$	9 $\frac{1}{4}$	3 63	6 23	10 16	15 00
West Virginia.....	8	12 $\frac{1}{6}$	5 00	5 17	11 36	11 16
Nebraska Territory.....	9 $\frac{1}{2}$	10 $\frac{8}{11}$	5 18	6 25	12 20	14 00

TABLE 1.—*Showing the condition of the weather.*

States.	WEATHER, (in weeks.)											
	January.						February.					
	Favorable.	Wet.	Very wet.	Dry.	Very dry.	Snow.	Favorable.	Wet.	Very wet.	Dry.	Very dry.	Snow.
Maine.....	23	0	0	16	6	11	17	27	2	7	0	4
New Hampshire.....	2	0	0	2	5	11	3	9	0	3	0	1
Vermont.....	8	0	0	9	2	12	9	8	0	3	0	5
Massachusetts.....	17	8	0	7	0	17	16	10	2	10	0	2
Rhode Island.....	4	1	0	3	0	0	1	4	0	3	0	0
Connecticut.....	7	0	0	2	6	1	9	3	0	1	0	0
New York.....	67	18	0	51	0	36	53	44	4	32	0	39
New Jersey.....	17	9	0	7	0	11	11	21	4	2	0	4
Pennsylvania.....	55	18	0	27	0	48	71	46	0	19	0	20
Maryland.....	15	12	6	1	0	6	8	17	9	5	0	1
Delaware.....	0	2	0	2	0	0	0	2	0	2	0	0
Kentucky.....	28	34	6	13	4	5	46	24	2	20	0	3
Ohio.....	95	23	0	36	0	21	73	29	1	26	0	49
Michigan.....	50	6	1	41	5	20	41	12	5	16	2	56
Indiana.....	78	26	4	46	0	30	66	35	3	31	4	56
Illinois.....	101	53	5	38	2	34	105	33	2	39	1	63
Missouri.....	47	31	0	22	0	33	57	31	4	19	3	18
Wisconsin.....	52	7	0	44	0	48	59	4	0	39	2	45
Iowa.....	71	22	5	19	0	71	100	9	0	20	0	61
Minnesota.....	30	2	0	14	0	53	33	1	0	24	2	40
Kansas.....	24	14	0	9	0	23	24	13	0	14	0	20
West Virginia.....	22	14	1	6	2	8	19	10	1	8	1	5
Nebraska Territory.....	14	6	0	1	0	14	20	3	0	1	0	12

## IMMIGRATION AT NEW YORK.

## MONTHLY ARRIVALS.

January .....	5,319	July .....	21,290
February .....	2,466	August .....	22,011
March .....	6,171	September .....	23,204
April .....	10,818	October .....	20,069
May .....	24,451	November .....	24,995
June .....	27,119	December .....	12,118
		Total .....	200,031

*Exports from New York of the leading agricultural products from January 1, 1866, to March 27, compared with those for the same time in 1865, and their prices in New York and Chicago.*

Articles.	1866.	1865.	Prices Mar. 27, in New York.	Prices Mar. 27, in Chicago.
Wheat ..... barrels	242,844	331,932	\$6 60 to \$10 75	\$4 75 to \$7 50
Rye flour ..... do	576	785	4 50 to 5 40	4 80
Corn meal ..... do	25,210	37,922	4 25 to 3 60	-----
Wheat ..... bushels	92,015	153,334	2 30 to 2 90	82½ to 1 39
Corn ..... do	1,417,709	110,256	74 to 90	37½ to 41
Rye ..... do	116,100	141	70 to 80	49
Barley ..... do			75 to 1 16	-----
Oats ..... do	332,293	17,505	37 to 54½	23¾ to 33
Peas ..... do	13,151	12,964	1 25 to 1 30	-----
Cotton ..... bales	144,615	10,381	33 to 44	-----
Hay ..... do	11,993	6,228	60 to 70	50 to 62
Hops ..... do	144	10,659	30 to 70	30 to 35
Leaf tobacco ..... packages	15,155	21,160	6 to 30	-----
Tobacco ..... hogsheads	11,642	23,761	-----	-----
Manufactured tobacco, pds	621,602	1,516,174	60 to 1 25	65 to 1 00
Petroleum ..... gallons	6,908,641	1,970,360	57 to 58	-----
Pork ..... barrels	23,198	35,618	24 00 to 26 00	19 00 to 25 37
Beef ..... do	7,938	11,240	15 00 to 24 00	14 00 to 16 00
Beef ..... tierces	14,724	24,364	-----	-----
Cut meats ..... pounds	12,439,721	15,733,387	11 to 19	-----
Butter ..... do	569,291	6,144,148	25 to 45	20 to 40
Cheese ..... do	2,553,685	8,798,763	18 to 22	17 to 19
Lard ..... do	9,057,931	10,386,086	16 to 19	18
Tallow ..... do			11½ to 13½	11½ to 11¾
Wool fleece ..... do			52 to 80	42 to 48
Sorghum molasses, gallons				35 to 50

## METEOROLOGY.

FEBRUARY, 1866.

Table showing the highest and lowest range of the thermometer, (with dates prefixed,) the mean temperature, and amount of rain, (in inches and tenths,) for February, 1866, at the following places, as given by the observers named. The daily observations were made at 7 o'clock a. m. and 2 and 9 p. m.

Place.	County.	Observer's name.	Date.	Max.	Date.	Min.	Mean.	Rain.
<b>MAINE.</b>								
Steuben	Washington	J. D. Parker	23, 24	46	7	-13	22.7	6.88
Lee	Penobscot	Edwin Pitman	24	54	7	-19	21.8	8.23
West Waterville	Kennebec	B. F. Wilbur	23, 24	48	7	-14	21.2	6.25
Gardiner	do	R. H. Gardiner	24	47	7	-14	21.4	5.24
Webster	Androscoggin	Almon Robinson	23	46	3, 7	-10	23.1	-----
Standish	Cumberland	John P. Moulton	23	51	7	-8	22.7	5.04
Cornish	York	Silas West	24	48	16	-7	21.7	5.70
Cornishville	do	G. W. Guptill	24	49	16	-8	22.3	5.12
<b>NEW HAMPSHIRE.</b>								
Stratford	Coos	Branch Brown	23, 24	51	16	-15	18.7	3.01
Shelburne	do	F. Odell	24	50	17	-18	-----	-----
North Barnstead	Belknap	Chas. H. Pitman	24	60	5, 16	-2	25.5	2.28
Concord	Merrimac	John T. Wheeler	24	55	5	-5	23.0	-----
Claremont	Sullivan	S. O. Mead	24	52	3	-8	21.9	-----
Do.	do	Arthur Chase	24	53	3	-6	23.8	5.45
<b>VERMONT.</b>								
Lunenburg	Essex	H. A. Cutting	24	57	7	-20	20.4	3.35
Craftsbury	Orleans	Jas. A. Paddock	23	54	16	-16	18.3	3.22
Randolph	Orange	Charles S. Paine	24	49	16	-19	21.8	4.02
Middlebury	Addison	H. A. Sheldon	24	48	16	-8	21.6	4.22
Brandon	Rutland	Harmon Buckland	23	52	16	-8	23.2	5.34
<b>MASSACHUSETTS.</b>								
Topsfield	Essex	A. M. Merriam	24	61	7	9	33.5	3.77
Georgetown	do	Henry M. Nelson	24	57	5, 7	-2	26.5	-----
Newbury	do	Jno. H. Caldwell	24	58	5	-2	26.4	-----
North Billerica	Middlesex	Rev. E. Nason	24	60	3	-4	28.4	-----
Cambridge	do	A. Fendier	24	60	7	-2	27.9	-----
New Bedford	Bristol	Samuel Rodman	23	53	7	1	30.5	4.37
Worcester	Worcester	Joseph Draper, M.D.	24	57	7	0	27.0	5.27
Mendon	do	Jno. G. Metcalf, M.D.	24	56	7	-4	28.6	3.90
Amherst	Hampshire	Prof. E. S. Snell	24	55	7	-3	26.2	4.62

Table showing the range of the thermometer, &amp;c., for February—Continued.

Place.	County.	Observer's name.	Date.	Max.	Date.	Min.	Mean.	Rain.
<b>MASSACHUSETTS—</b>								
Continued.								
Springfield .....	Hampden .....	J. Weatherhead .....	24	55	7	— 3	27.1	4.86
Westfield .....	do .....	Rev. E. Davis .....	23, 24	55	7	— 2	29.5	4.53
Richmond .....	Berkshire .....	Wm. Bacon .....	23, 24	54	16	— 4	.....	
Williams College .....	do .....	Prof. A. Hopkins .....	24	55	16	— 15	24.9	1.78
<b>RHODE ISLAND.</b>								
Newport .....	Newport .....	Wm. H. Crandall .....	23, 24	53	7	5	31.3	5.41
<b>CONNECTICUT.</b>								
Pomfret .....	Windham .....	Rev. D. Hunt .....	12	57	7	— 3	26.7	5.03
Columbia .....	Tolland .....	Wm. H. Yeomans .....	11, 23, 24	56	7	5	31.1	.....
Colebrook .....	Litchfield .....	Charlotte Rockwell .....	24	55	7	— 8	23.5	.....
Groton .....	New London .....	Rev. E. Dewhurst .....	23	55	7	0	31.6	4.86
<b>NEW YORK.</b>								
Moriches .....	Suffolk .....	Miss N. Smith .....	23	58	16, 17	11	34.3	5.98
South Hartford .....	Washington .....	G. M. Ingalsbe .....	23	56	16	— 10	25.6	4.74
Fishkill Landing .....	Dutchess .....	Wm. H. Denning .....	24	54	7	4	28.5	5.26
Garrison's .....	Putnam .....	Thomas B. Arden .....	24	52	7	1	27.7	3.73
Throg's Neck .....	Westchester .....	Miss E. Morris .....	24	50	16	0	27.6	.....
Do .....	do .....	F. M. Rogers .....	23	56	16	4	28.9	4.81
Deaf & Dumb Inst .....	New York .....	Prof. O. W. Morris .....	11	59	16	5	34.3	11.00
Columbia College .....	do .....	H. B. Cornwall .....	23	52	16	6	29.6	5.05
Flatbush .....	Kings .....	Eli T. Mack .....	23	52	16	5	29.9	2.17
Newburgh .....	Orange .....	James H. Gardiner .....	23	51	7	0	27.8	5.03
Gouverneur .....	St. Lawrence .....	C. H. Russell .....	23	51	16	— 22	20.9	2.97
South Trenton .....	Oneida .....	Storrs Barrows .....	22, 24	50	6	— 2	22.5	5.75
Oneida .....	Madison .....	S. Spooner, M. D. ....	22, 23	48	5	— 6	25.4	5.26
Theresa .....	Jefferson .....	S. O. Gregory .....	23	51	5	— 17	20.0	2.90
Depauville .....	do .....	Henry Haas .....	23	49	16	— 8	21.9	3.98
Oswego .....	Oswego .....	Wm. S. Malcolm .....	22	48	16, 17	1	24.6	2.85
Palermo .....	do .....	E. B. Bartlett .....	23	48	5, 6	— 9	20.8	7.20
Skaneateles .....	Onondaga .....	W. M. Beauchamp .....	24	50	16	— 2	33.6	.....
Baldwinsville .....	do .....	John Bowman .....	24	48	16	1	29.3	.....
Nichols .....	Tioga .....	Robert Howell .....	23	57	16	— 2	27.2	.....
Geneva .....	Ontario .....	Rev. Dr. W. D. Wilson .....	22	53	16	0	25.5	1.07
Rochester .....	Monroe .....	M. M. Mathews, M. D. ....	22	53	16	2	26.0	2.39
Do .....	do .....	Prof. C. Dewey .....	22, 23	53	16	— 3	25.6	2.39
Little Genesee .....	Allegany .....	Daniel Edwards .....	23	58	16	— 10	24.4	.....
Buffalo .....	Erie .....	William Ives .....	23	54	16	— 5	25.5	2.55
Jamestown .....	Chautauqua .....	Rev. S. W. Roe .....	22, 28	60	16	— 16	25.8	4.05
<b>NEW JERSEY.</b>								
Paterson .....	Passaic .....	William Brooks .....	24	55	16	3	29.6	5.67
Newark .....	Essex .....	W. A. Whitehead .....	14	59	16	5	30.2	5.07
New Brunswick .....	Middlesex .....	Geo. H. Cook .....	23, 24	62	16	3	30.6	4.76
Trenton .....	Mercer .....	E. R. Cook .....	24	58	16	8	33.8	6.25
Burlington .....	Burlington .....	John C. Deacon .....	24	64	16	4	32.9	5.20
Moorestown .....	do .....	Thomas J. Beans .....	23	64	16	4	31.9	5.18

Table showing the range of the thermometer, &amp;c., for February—Continued.

Place.	County.	Observer's name.	Date.	Max.	Date.	Min.	Mean.	Rain
<b>NEW JERSEY—</b>								
Continued.								
Mount Holly .....	Burlington .....	M. J. Rhee, M. D ..	24	64	16	8	33.3	.....
Seaville .....	Cape May .....	Barker Cole .....	12	54	5	10	35.3	8.90
Haddonfield .....	Camden .....	James S. Lippincott ..	11, 24	61	16	3	31.3	4.05
Greenwich .....	Cumberland .....	R. C. Sheppard .....	23	58	16	6	33.4	4.95
<b>PENNSYLVANIA.</b>								
Nyce's .....	Pike .....	John Grathwohl .....	23	49	7	—10	23.0	4.85
Fallsington .....	Bucks .....	Ebenezer Hance .....	24	62	16	7	33.3	5.00
Philadelphia .....	Philadelphia .....	Pf. J. A. Kirkpatrick ..	24	60	16	8	35.2	6.64
Germanstown .....	do .....	Thomas Meehan .....	23	59	16	2	31.8	.....
Moorland .....	Montgomery .....	Miss Anna Spencer .....	23	59	16	3	30.8	5.10
Dyberry .....	Wayne .....	Theodore Day .....	23	59	7	—12	22.7	.....
Nazareth .....	Northampton .....	L. E. Ricksecker .....	11	56	16	0	29.8	.....
North Whitehall .....	Lehigh .....	Edward Kohler .....	24	50	16	—2	29.0	.....
Parkesville .....	Chester .....	Fenelon Darlington .....	23	57	16	3	30.8	6.14
Oley .....	Berks .....	A. S. Bertolet .....	28	61	16	1	33.8	.....
Ephrata .....	Lancaster .....	W. H. Spera .....	23	68	5	4	31.7	4.57
Silver Spring .....	do .....	H. G. Bruckhart .....	23	56	16	4	30.9	.....
Mountjoy .....	do .....	J. R. Hoffer .....	23	58	16	5	32.6	1.20
Harrisburg .....	Dauphin .....	John Heisely, M.D ..	23	55	16	6	31.9	4.11
Lewisburg .....	Union .....	C. S. James .....	23	53	7	—5	26.9	2.74
Tioga .....	Tioga .....	E. T. Bentley .....	23	62	16	—8	27.1	2.10
Pennsville .....	Clearfield .....	Elisha Fenton .....	28	55	17	—8	24.4	3.30
Connellsburg .....	Fayette .....	John Taylor .....	23	62	16	—9	30.3	.....
New Castle .....	Lawrence .....	E. M. McConnell .....	23	58	16	—7	28.7	.....
Canonsburg .....	Washington .....	Rev. Wm. Smith, D.D ..	22	58	16	—10	27.5	2.54
<b>MARYLAND.</b>								
Woodlawn .....	Cecil .....	Jas. O. McCormick .....	23	58	16	4	33.2	5.86
Catonsville .....	Baltimore .....	Grape & Ranlett .....	11	56	16	0	30.6	.....
Annapolis .....	Anne Arundel .....	Wm. R. Goodman .....	23	56	16	4	34.2	5.43
St. Inigoes .....	St. Mary's .....	Rev. J. Stephenson .....	11	65	16	3	37.1	4.26
Frederick .....	Frederick .....	Miss H. M. Baer .....	23	60	16	1	30.1	3.25
A.								
Wythesville .....	Wythe .....	Howard Shriver .....	10	62	16	—3	34.1	.....
<b>WEST VIRGINIA.</b>								
Cabell Court House .....	Cabell .....	C. L. Roffe .....	23, 28	64	16	—2	34.2	1.10
<b>NORTH CAROLINA.</b>								
Wilson .....	Wilson .....	E. W. Adams, A. M. ..	24	74	16	10	44.2	2.37
<b>GEORGIA.</b>								
Atlanta .....	Fulton .....	Frederick Deckner .....	23	64	16	4	42.1	5.18
<b>MISSISSIPPI.</b>								
Natchez .....	Adams .....	Robert McCary .....	23, 28	70	15	14	47.4	10.70

Table showing the range of the thermometer, &amp;c., for February—Continued.

Place.	County.	Observer's name.	Date.	Max.	Date.	Min.	Mean.	Rain.
ARKANSAS.								In.
Helena.....	Phillips.....	O. F. Russell.....	28	73	15	7	44.2	6.47
TENNESSEE.								
Clarksville .....	Montgomery.....	Wm. M. Stewart.....	27	66	15	0	37.6	4.14
KENTUCKY.								
Louisville .....	Jefferson .....	Mrs. L. Young .....	23	67	15, 16	— 3	36.3	2.05
(Near) Chilesburg.....	Clark.....	S. D. Martin, M.D. ..	27, 28	62	16	— 4	34.9	3.35
London.....	Laurel .....	W. S. Doak.....	28	66	16	— 3	33.8	.....
OHIO.								
Austinburg .....	Ashtabula .....	E. D. Winchester .....	23	52	16	— 14	23.0	.....
Saybrook .....	do .....	James B. Fraser .....	23	56	16	— 13	24.9	.....
New Lisbon.....	Columbiana .....	J. F. Benner .....	22, 23	68	16	— 8	29.1	1.88
East Fairfield.....	do .....	S. B. McMillan .....	23	54	16	— 8	27.4	1.83
Steubenville.....	Jefferson .....	Joseph B. Doyle .....	22	56	16	— 3	32.2	.....
Milnersville .....	Guernsey .....	Rev. D. Thompson .....	23	61	16	— 10	29.0	1.86
East Cleveland .....	Cuyuhoga .....	Mr. & Mrs. G. A. Hyde .....	28	59	16	— 11	27.8	2.30
Wooster .....	Wayne .....	Martin Winger .....	23	58	16	— 10	26.3	.....
Gallipolis .....	Gallia .....	A. P. Rogers .....	22, 28	61	16	— 2	33.2	2.57
Kelley's Island.....	Erie .....	Geo. C. Huntington .....	22	51	16	— 13	26.1	1.68
Norwalk .....	Huron .....	Rev. A. Newton .....	28	59	16	— 13	26.5	2.17
Westerville .....	Franklin .....	Pf. H. A. Thompson .....	28	58	16	— 9	27.0	.....
Kingston .....	Ross .....	Prof. Jno. Haywood .....	22	64	16	— 7	30.7	2.07
Toledo .....	Lucas .....	J. B. Trembly, M.D. .....	23	56	16	— 16	25.5	2.81
Marion .....	Marion .....	H. A. True, M.D. ....	28	58	16	— 14	25.2	2.22
Urbana University .....	Champaign .....	Prof. M. G. Williams .....	22, 28	58	16	— 12	26.3	2.25
Hillsboro'.....	Highland .....	J. McD. Mathews .....	23	58	16	— 8	29.3	2.33
Ripley .....	Brown .....	G. Bambach, M.D. ....	22	64	16	— 6	33.6	1.95
Bethel .....	Clermont .....	Geo. W. Crane .....	22, 23	62	16	— 8	30.4	1.20
Cincinnati.....	Hamilton .....	George W. Harper .....	23, 28	62	15	— 6	32.0	1.26
Do.....	do .....	R. C. Phillips .....	22, 23	62	16	— 2	39.6	1.10
College Hill.....	do .....	L. B. Tuckerman .....	23, 27	58	16	— 7	28.8	0.88
MICHIGAN.								
Monroe.....	Monroe .....	Miss F. E. Whelpley .....	22	53	16	— 8	26.8	1.80
State Ag. College .....	Ingham .....	Prof. R. C. Kedzie .....	22	54	16	— 15	22.7	2.28
Homestead .....	Benzie .....	Geo. E. Steele .....	28	47	26	— 9	18.5	.....
Holland .....	Ottawa .....	L. H. Streng .....	28	54	15	— 2	25.8	3.79
Coldwater .....	Branch .....	Harvey Haynes .....			16	— 20	.....	
INDIANA.								
Balbec .....	Jay .....	Miss M. Gries .....	22	52	16	— 27	20.3	.....
Aurora .....	Dearborn .....	Geo. Sutton, M. D. ....	22, 23	61	16	— 10	31.3	1.31
Vevay .....	Switzerland .....	Chas. G. Boerner .....	27	70	16	— 7	33.6	1.84
Richmond .....	Wayne .....	John Valentine .....	23, 28	55	16	— 20	25.3	2.51
Spiceland .....	Henry .....	Wm. Dawson .....	28	60	16	— 21	27.0	2.50
Columbia .....	Whitley .....	Dr. F. & Miss McCoy .....	28	60	16	— 23	25.7	2.05
Indianapolis .....	Marion .....	Dr. & Mrs. Butterfield .....	28	62	16	— 15	27.9	.....
New Harmony .....	Posey .....	Jno. Chappellsmith .....	28	65	15	— 2	34.2	1.95
ILLINOIS.								
Chicago .....	Cook .....	Samuel Brookes .....	28	46	16	— 20	17.9	.....
Marengo .....	McHenry .....	J. S. Rogers .....	28	52	15	— 17	20.7	.....

Table showing the range of the thermometer, &amp;c., for February—Continued.

Place.	County.	Observer's name.	Date.	Max.	Date.	Min.	Mean.	Rain.
<b>ILLINOIS—Cont'd.</b>								
Riley.....	McHenry.....	E. Babcock.....	28	53	15	—20	19.3	0.82
Golconda.....	Pope.....	W. V. Eldredge.....	28	70	15	—8	38.7	1.20
Aurora.....	Kane.....	A. Spaulding.....	28	55	15	—20	21.5	1.42
Sandwich.....	DeKalb.....	N. E. Ballou, M.D. ....	28	53	16	—23	19.6	1.80
Ottawa.....	La Salle.....	Mrs. E. H. Merwin.....	28	57	15	—22	20.9	2.49
Winnebago.....	Winnebago.....	J. W. & Miss Tolman.....	28	53	15	—21	17.9	0.98
Wyanet.....	Bureau.....	E. S. & Miss Phelps.....	28	57	15	—19	21.9	1.51
Tiskilwa.....	do.....	Verry Aldrich.....	28	54	16	—17	22.8	.....
Elmira.....	Stark.....	O. A. Blanchard.....	28	62	15	—22	23.3	1.05
Hennepin.....	Putnam.....	Smiley Sheppard.....	28	60	15	—18	23.0	.....
Peoria.....	Peoria.....	Frederick Brendel.....	28	59	15	—13	25.0	1.10
Springfield.....	Sangamon.....	G. M. Brinkerhoff.....	27	60	15	—12	26.6	.....
Loami.....	do.....	Timothy Dudley.....	27, 28	62	15	—16	26.7	1.75
Dubois.....	Washington.....	Wm. C. Spencer.....	28	63	15	—6	29.2	1.30
Galesburg.....	Knox.....	Pf. Wm. Livingston.....	28	55	15	—17	20.4	0.98
Augusta.....	Hancock.....	S. B. Mead, M. D. ....	28	65	15	—17	26.7	1.43
Mount Sterling.....	Brown.....	Rev. A. Duncan.....	27, 28	62	15	—18	26.2	2.11
Andalusia.....	Rock Island.....	Dr. E. H. Bowman.....	28	58	15	—14	19.6	.....
<b>WISCONSIN.</b>								
Manitowoc.....	Manitowoc.....	Jacob Lüps.....	28	49	15	—11	18.1	1.12
Milwaukee.....	Milwaukee.....	I. A. Lapham, LL.D. ....	28	50	16	—18	19.2	1.64
Do.....	do.....	Carl Winkler.....	28	54	16	—15	21.2	0.65
Ripon.....	Fond du Lac.....	Prof. Wm. H. Ward.....	28	54	15	—22	17.9	.....
Delavan.....	Walworth.....	Leveus Eddy.....	28	49	15	—19	17.5	1.55
Waupaca.....	Waupaca.....	H. C. Mead.....	28	50	15	—18	17.2	0.80
Weyauwega.....	do.....	J. C. Hicks.....	28	58	15	—5	23.3	0.65
Embarrass.....	do.....	E. Everett Breed.....	28	56	15	—25	15.7	1.12
Rocky Run.....	Columbia.....	W. W. Curtis.....	28	47	15	—20	16.7	0.94
Baraboo.....	Sank.....	M. C. Waite.....	28	52	15	—12	21.4	2.25
Beloit.....	Rock.....	H. D. Porter.....	28	48	15	—20	17.3	0.70
Plymouth.....	Sheboygan.....	G. Moeller.....	28	53	15, 25	—20	15.0	1.90
Odanah.....	Ashland.....	Edwin Ellis.....	9	44	15	—16	13.3	1.21
<b>MINNESOTA.</b>								
Afton.....	Washington.....	Dr. & Mrs. Babcock.....	28	44	15	—28	9.5	.....
St. Paul.....	Ramsey.....	Rev. A. B. Paterson.....	28	39	15	—29	8.6	0.30
Minneapolis.....	Hennepin.....	Wm. Cheney.....	21	40	15	—31	6.8	1.88
Forest City.....	Meeker.....	H. L. Smith.....	27	49	15	—33	11.1	.....
Sibley.....	Sibley.....	C. A. Woodbury.....	27	43	15	—37	8.5	.....
New Ulm.....	Brown.....	Charles Roos.....	21, 27, 28	39	15	—20	11.4	0.40
<b>IOWA.</b>								
Clinton.....	Clinton.....	P. J. Farnsworth.....	28	54	15	—24	20.6	3.00
Lyons.....	do.....	A. T. Hudson.....	28	47	15	—22	17.7	0.66
Davenport.....	Scott.....	George B. Pratt.....	28	52	15	—17	19.7	1.21
Dubuque.....	Dubuque.....	Asa Hora, M. D. ....	28	53	15	—20	18.8	1.28
Muscatine.....	Muscatine.....	J. P. Walton.....	28	54	15	—21	17.0	0.58
Fort Madison.....	Lee.....	Daniel McCready.....	28	55	15	—20	27.1	3.05
Monticello.....	Jones.....	Chauncey Mead.....	28	53	15	—26	13.1	1.02
Guttenberg.....	Clayton.....	Philip Dorweiler.....	28	45	15	—23	14.7	1.39
eres.....	do.....	J. M. Hagensick.....	28	49	15	—24	15.1	.....

Table showing the range of the thermometer, &amp;c., for February—Continued.

Place.	County.	Observer's name.	Date.	Max.	Date.	Min.	Mean.	Rain.
<b>IOWA—Continued.</b>								
Manchester.....	Delaware.....	Allen Mead.....	28	44	15	—24	10.6	.....
Mount Vernon.....	Linn.....	Prof. A. Collins.....	28	59	15	—20	18.6	.....
Iowa City.....	Johnson.....	Prof. T. S. Parvin.....	28	55	15	—20	19.6	1.35
Independence.....	Buchanan.....	A. C. Wheaton.....	28	52	15	—30	13.5	3.10
Do.....	do.....	D. S. Deering.....	28	48	15	—20	17.0	.....
Waterloo.....	Black Hawk.....	T. Steed.....	28	50	15	—19	17.0	.....
Iowa Falls.....	Hardin.....	N. Townsend.....	21, 28	42	15	—21	18.3	1.49
Des Moines.....	Polk.....	Rev. J. A. Nash.....	27, 28	64	15	—22	22.0	0.63
Clarinda.....	Page.....	Dr. & Mrs. Kridelbaugh.....	27, 28	62	14	—17	24.6	.....
<b>MISSOURI.</b>								
St. Louis University.....	St. Louis.....	Rev. F. H. Stuntebeck.....	27	68	15	—5	33.8	1.33
St. Louis.....	do.....	G. Engelmann, M.D.....	27	68	15	—7	32.6	2.24
Athens.....	Clark.....	J. T. Caldwell.....	27	62	15	—14	29.2	3.70
Canton.....	Lewis.....	George P. Ray.....	27	60	15	—20	24.0	0.80
Harrisonville.....	Cass.....	John Christian.....	27	64	15	—8	32.0	1.76
Easton.....	Buchanan.....	P. B. Sibley.....	27	64	15	—21	29.6	0.97
<b>KANSAS.</b>								
Atchison.....	Atchison.....	Dr. and Miss Horn.....	27	62	15	—17	26.4	.....
Fort Riley.....	Davis.....	Essex P. Camp.....	27, 28	70	13, 15	7	33.2	.....
Council Grove.....	Morris.....	Abner Woodworth.....	27	70	15	—6	34.1	.....
<b>NEBRASKA TER.</b>								
Elkhorn.....	Washington.....	John S. Bowen.....	28	62	15	—20	25.8	.....
Bellevue.....	Sarpy.....	Rev. Wm. Hamilton.....	28	65	15	—13	24.8	0.40
Glendale.....	Cass.....	A. L. Child, M. D.....	28	68	15	—32	22.8	0.66
<b>UTAH TER.</b>								
Great Salt Lake city.....	Great Salt Lake.....	W. W. Phelps.....	7, 21, 28	50	17	—3	33.0	1.60

Table showing the average temperature and fall of rain (in inches and tenths) for the month of February, in each year named, and for the five years first named, collectively, with the average number of places in each State in which the observations were made.

States and Territo- ries.	Av. for five years.										Averages, 1864.		Averages, 1865.		Averages, 1866.			
	Averages, 1855.		Averages, 1856.		Averages, 1857.		Averages, 1858.		Averages, 1859.		Averages, 1864.		Averages, 1865.		Averages, 1866.			
	Av. number of places.	Mean temp.	Mean rain.	Av. number of places.	Mean temp.	Mean rain.	Av. number of places.	Mean temp.	Mean rain.	Av. number of places.	Mean temp.	Mean rain.	Av. number of places.	Mean temp.	Mean rain.	Av. number of places.	Mean temp.	Mean rain.
Maine	5	Deg. 16.2	In. 7.25	Deg. 1.91	In. 26.4	Deg. 7.88	Deg. 2.04	In. 91.9	Deg. 3.73	In. 19.4	Deg. 4.57	In. 22.6	Deg. 2.73	In. 92.1	Deg. 6.07	In. 22.6	Deg. 3.58	
New Hampshire	4	18.8	5.64	17.5	1.53	28.8	2.52	16.1	1.60	23.7	2.26	21.1	1.72	22.9	2.34	22.6	3.58	
Vermont	4	21.7	0.98	14.9	0.91	37.8	3.04	14.1	1.20	22.8	1.54	1.54	1.44	18.8	1.69	21.1	4.03	
Massachusetts	12	31.2	3.38	20.8	1.08	32.6	2.21	22.4	1.68	28.3	4.17	25.1	2.57	30.5	3.05	36.7	4.14	
Rhode Island	1	22.1	4.05	18.7	0.90	32.7	3.26	24.5	2.80	31.6	1.85	26.9	2.55	30.6	3.80	31.3	5.41	
Connecticut	4	19.7	4.10	23.0	1.32	32.8	2.45	21.5	2.00	29.8	2.41	25.5	3.50	28.9	1.63	25.7	5.00	
New York	18	18.0	15.6	8.82	32.7	2.45	21.5	2.00	29.8	2.41	25.5	3.50	28.9	1.63	25.7	3.08		
New Jersey	4	25.1	3.96	23.7	0.84	37.1	1.77	20.4	2.51	33.4	3.48	29.1	2.37	32.8	0.51	30.3	4.34	
Pennsylvania	19	23.0	2.59	1.14	36.4	1.54	25.6	1.90	33.6	3.13	28.2	2.06	32.8	0.97	27.0	4.47		
Delaware	1	25.1	3.05	25.1	1.30	39.5	2.37	1.68	3.48	32.4	3.03	31.1	8.00	29.6	4.02	36.7	4.03	
Maryland	5	26.2	2.07	26.1	0.84	40.4	0.68	27.5	3.27	36.9	4.38	32.4	3.03	31.5	0.97	32.1	4.70	
District of Columbia	1	27.0	2.70	27.0	0.64	42.0	0.65	31.0	1.67	30.4	3.54	33.3	1.30	31.5	0.71	32.1	4.70	
South Carolina	6	44.2	1.46	45.9	2.06	57.4	1.01	46.3	6.60	51.4	3.93	40.0	3.01	52.0	0.36	49.0	2.75	
Tennessee	2	35.4	1.30	35.3	2.90	52.5	2.65	36.8	3.21	46.7	7.66	40.9	3.54	37.0	1.72	38.2	3.58	
Kentucky	4	30.5	2.08	32.2	2.08	46.5	3.14	30.2	3.06	47.6	3.51	33.4	1.72	38.2	3.58	35.0	2.70	
Ohio	19	23.7	1.70	23.2	0.82	30.8	2.50	24.5	2.30	34.0	4.21	29.0	2.53	31.0	1.31	29.9	1.90	
Michigan	7	17.0	1.59	14.2	1.72	27.6	4.26	19.0	2.17	27.7	1.69	21.1	2.18	27.9	1.01	23.5	2.62	
Indiana	4	27.6	0.92	41.9	4.60	59.8	2.00	37.0	5.16	31.6	1.05	27.9	1.01	23.5	2.03	28.2	2.03	
Illinois	13	22.7	0.82	21.3	1.48	31.0	5.18	19.6	1.76	29.7	2.10	25.5	2.97	30.0	1.72	32.1	2.75	
Wisconsin	9	13.1	1.33	4.40	25.8	2.77	16.0	0.89	23.3	1.44	23.6	1.35	27.2	2.33	37.6	4.14	37.6	4.14
Minnesota	3	7.7	12.1	1.33	3.30	10.1	0.70	14.6	0.58	11.0	1.33	22.5	2.27	22.8	1.56	22.7	1.91	
Iowa	8	18.3	1.71	16.1	1.33	27.2	5.30	16.5	1.61	26.4	1.92	20.9	2.38	26.6	0.47	27.5	4.68	
Missouri	2	28.9	0.63	26.0	3.64	42.1	6.29	29.9	1.81	36.9	5.35	32.8	3.54	35.4	3.99	38.1	1.56	
Nebraska Territory	3	17.3	0.80	17.3	0.80	23.8	5.35	20.5	0.74	31.2	0.67	29.5	5.88	34.5	0.53	30.2	1.80	
Kansas	3	22.7	0.51	22.6	3.64	31.6	4.42	29.8	0.74	31.1	0.74	29.5	5.88	34.5	0.53	30.2	1.80	
California	2	32.7	2.67	32.2	0.44	40.4	4.87	33.9	2.01	51.0	4.58	22.91	3.08	31.2	0.08	31.2	0.08	

## NOTES OF THE WEATHER—FEBRUARY, 1866.

## FROM THE SMITHSONIAN INSTITUTION.

The most interesting feature of the meteorology of February was the intense cold of the 15th in the western States, being the lowest temperature of the winter west of Pennsylvania. It was accompanied by a severe wind, the influence of which was felt to the Atlantic coast.

*St. John, New Brunswick.*—Eight inches of snow fell during February; the average of the month for sixteen years is 12.9 inches. The rain-fall was unusually large; there is nothing on record for February nearly equal to it. Another peculiarity was the short time in which it fell. The amount for the month was 6.99 inches. The average since 1850, this month included, is 2.61 inches.

*Gardiner, Maine.*—In the month of February the thermometer was below zero on seven nights; the river was frozen twenty-eight days; eleven and a half inches of snow fell, and there were twenty-three days of sleighing. The mean temperature of February for thirty years is  $20.437^{\circ}$ ; the mean moisture of the month for twenty-eight years is 3.269 inches. The moisture of the present month is greater than that of any other February for twenty-eight years, except 1853, when it was 9.467, and 1843 when it was 5.676.

*Lisbon, Maine.*—February 28.—Snow all gone in the roads, but little in the fields.

*Webster, Maine.*—February 25.—The rain yesterday and last night washed away nearly all that was left of the snow, except the remnants of deep drifts.

*Claremont, New Hampshire.*—A heavy thaw occurred on the 23d and 24th of February, which cleared the remaining ice out of Sugar river and broke up the ice in the Connecticut. The ground being frozen hard, all the rain as well as melted snow ran directly into the streams. On the Connecticut river, in this neighborhood, two bridges were carried away, and two more below them damaged. Many sheep and cattle were lost by unexpected setting back of the water. The damage was caused by the very strong ice forming dams at bends of the river, and against islands, thus raising the river in particular places many feet higher than it would have been otherwise.

*Shelburne, New Hampshire.*—February 25.—Androscoggin river broken up in places.

*Stratford, New Hampshire.*—February 28.—A little more water in the streams; mills doing more business; wells and springs low yet; the ground frozen so hard that water stands on the surface and forms a great quantity of ice in low and wet places.

*Randolph, Vermont.*—February 15.—Eight inches of snow fell yesterday afternoon and last night. 20th, red crossbill seen. 22d, sap starts from sugar maples. 24th, thawed all last night and rained to-day from 1 p. m. to 10 p. m. 25th, water rose last night one foot above high-water mark, as observed by a trustworthy person. Ice piled up so as to prevent passing on the highway, eight feet high in some places. Water had fallen about one foot at 7 this morning; many bridges were swept away. Twenty inches of snow fell during the month.

*Brandon, Vermont.*—February 24.—Brandon river the highest known for many years. 28th, there were fifteen days of good sleighing this month.

*Lunenburg, Vermont.*—February 24.—Thaw continues; sleighing spoiled; raining hard in the afternoon; streams rising rapidly. 25th, much bare ground; streams very high; ice carried out of the Connecticut river from head of Fifteen-

mile falls; several bridges carried away and much damage done; ice about eighteen inches thick, firm and solid.

*Middlebury, Vermont.*—Good sleighing about three weeks of the month.

*Mendon, Massachusetts.*—February 28.—Ground bare of snow; roads muddy; one week only of sleighing for the winter.

*New Bedford, Massachusetts.*—February 14.—Thunder-storm at night about one o'clock. 28th.—No serious obstruction to navigation as it respects lower harbor, and wharves south of the bridge, has occurred from ice this winter.

*Richmond, Massachusetts.*—February 8.—The heaviest snow of the season (eight inches) fell to-day, and the prospect of a good run of sleighing is very fine. 12th, raining all day; sleighing destroyed. The quantity of water from the rain and melted snow was unusually large, and came in a good time. In consequence of the frozen state of the ground it did not affect springs, but streams and ponds were filled so as to give a timely relief.

*Georgetown, Massachusetts.*—February 13.—Distant but distinct peals of thunder and several vivid flashes of lightning, between 1 and 2 o'clock this morning, during a rapid rain-fall. 19th, ground apparently free from frost in a few places. It has not been solidly frozen this winter, although frost has been found twelve or fourteen inches below the surface. At the time of the severest cold, the ground, although entirely free from snow, was also very free from moisture, the probable cause of the slight freeze. 28th, surface again frozen three inches.

*Westfield, Massachusetts.*—February 18 and 19.—The streams rose and the ice was swept away from the river. 28th, there was very little sleighing, during the month.

*Newbury, Massachusetts.*—February 14.—Lightning, with some thunder, between 12 and 1 o'clock at night.

*Pomfret, Connecticut.*—February 12.—Thunder in the night; great rain and damage.

*Groton, Connecticut.*—February 14.—Very high wind this evening from the east, with rain; very sharp lightning and heavy thunder.

*Columbia, Connecticut.*—February 14.—Thunder and lightning accompanied the rain this evening.

*Depauville, New York.*—February 28.—Since the thaw and rain on the 24th, the fields and meadows have been bare, except along fences or where the snow was heaped into banks by drift. Sleighing was good all along the month till the last thaw, when the snow, which had drifted, and lay from one to three feet in the roads, was reduced about one-half, leaving some short sections of the road bare. On the whole, the weather of February was quite favorable for all out-door work of the season. The ground is now frozen from two to three feet. This may be very beneficial, as it will loosen and mellow the soil, and may destroy numbers of eggs and grubs of injurious insects and worms.

*Nichols, New York.*—February 25.—Susquehanna river crowded all day with floating ice; a large portion of the dam across the river at Towanda was torn away; this will stop navigation for several months on the North Branch canal, Pennsylvania. 28th.—No sleighing of any amount this month or during the winter.

*Palermo, New York.*—February 4.—A snow-storm set in on the morning of the 2d, and continued with unabated fury to  $3\frac{1}{2}$  p. m. to-day. The snow fell three and a half feet on the level. 5th, roads all blocked up with snow. This has been the heaviest snow-storm, except one in February, 1856, within the remembrance of the observer. 9th, first regular mail received in a week. 11th.—Warm rain yesterday and to-day; snow settling very fast. 28th.—Fifty-eight inches of snow fell during the month, the largest amount in the memory of the oldest inhabitants. It has been the coldest February, except in 1865, during the last nine years.

*Garrison's, New York.*—The weather during February has been very variable. The ground being covered with a slight coating of snow, has in a measure protected the winter grain and grass roots. The frost is found on an average at the depth of ten inches.

*South Hartford, New York.*—The ground was frozen to a great depth in February; there were about two weeks of sleighing.

*Moriches, New York.*—February 14.—About 11 p. m. thunder and lightning were noticed three or four times in a westerly direction.

*Newburgh, New York.*—On the 22d of February the observer skated to Poughkeepsie. The ice was pretty good in places. For two or three days previous to this date the ice would be beautiful and hard in the morning, making good skating, but at noon it began to cut in and become soft. At Poughkeepsie, horses and sleighs were crossing. This had been discontinued at Newburgh for some time. Returned in the cars, and crossed over to Newburgh in the ferry-boat. The ice smoked in the bay; it was wasting rapidly. Where hundreds had been skating a few hours before, the ice would now scarcely bear thirty pounds, and holes appeared in many places. At 5 p. m. it moved for the first time, and the next morning was in motion, and at 7 p. m. on the 23d the bay was nearly clear of ice for the time, having been closed since the 8th of January.

*Rochester, New York.*—February 14.—A slight freshet in the Genesee river, but not sufficient to break up the ice. 25th, freshet in the Genesee; ice broke up and went over the falls yesterday afternoon. 27th, snow melting very fast; high water in the Genesee. Twenty-one inches of snow fell during the month.

*Hector, New York.*—February 28.—The winter here has been an open one, but pretty cold; ground frozen more than two feet in depth.

*Fishkill on Hudson, New York.*—February 23.—The river broke at 7 p. m.; snow entirely gone. The winter has been severe as to snow on grain; the ground has been uncovered four times just before a severe frost.

*Newark, New Jersey.*—February 28.—During the winter just closed more water fell in rain and melted snow than in any winter covered by the record of the observer. The mean temperature of February was about a tenth of a degree above the average for twenty-two years.

*Trenton, New Jersey.*—February 12.—About two inches of rain fell to-day. The river is very high, rising about sixteen inches in an hour, caused by the ice being jammed. The ice broke loose from the river at about 3 p. m. This is the first time in seven or eight weeks that the river has been clear of ice. 16th, river, canal, and streams all frozen over again.

*Greenwich, New Jersey.*—February 6.—Two blue-birds seen near the house to-day. 11th, the crocuses and daffodils are an inch above ground. 12th, in ground destitute of sod, frost is found ten and three-quarters inches deep. 22d, simplo carpus fatidus in bloom in the woods. 24th, croaking of frogs first heard.

*Burlington, New Jersey.*—The river broke on the 14th, froze again on the night of the 15th, and broke up again on the 19th. Frost all out of the ground on the 24th, except in spots protected from the sun.

*Seaville, New Jersey.*—February 19.—Thunder and lightning at 7 a. m.; the first this winter.

*Horsham, Pennsylvania.*—Blue-birds were first seen about the middle of February, and snow-drops were found about the same time. During the most of the month the roads have been very deep and travelling difficult.

*Pennsville, Pennsylvania.*—February has been mostly very favorable for outdoor work; no deep snows or heavy drifts. There were two cold spells—one near the beginning, the other about the middle, of the month. The remainder of the month was moderately warm, but not sufficient to break up the roads. The passing was mostly good, though sometimes wheels were better than run-

ners. At the close of the month the ground is mostly bare, yet hard-frozen except a little on the surface.

*Canonsburg, Pennsylvania.*—Blue-birds arrived on the 18th and robins on the 23d.

*Dyberry, Pennsylvania.*—February 28.—During the past winter there has been much less general good sleighing here than common, only February 14 to 18, though on some ridge roads descending northward it has been good all winter. Fields are now getting bare, while ten or twelve inches of snow remains in the woods. The heaviest fall of snow was ten and a half inches on the 8th and 9th of February. Lumbermen are beginning to raft sawed timber.

*Tioga, Pennsylvania.*—February 28.—The last four days have been warm and spring-like; quite unusual for this country. There has not been one day of good sleighing on the river roads this winter. There have been several light snows, but one would be nearly or quite gone before another came.

*Connellsville, Pennsylvania.*—Robins seen on the 16th and blue-birds on the 20th. Diffuse lightning in the northeast at 5 a. m. on the 25th; thunder in the southeast at 7 a. m.

*Nazareth, Pennsylvania.*—A crow black-bird (*quiscalus versicolor*) seen on the 25th; blue-birds plenty every day since the 21st.

*Fallsington, Pennsylvania.*—February 12.—Rain-storm; Delaware river broke, and the ice went off gently.

*Frederick City, Maryland.*—February 6th.—Blue-birds singing quite merrily this morning.

*Catonsville, Maryland.*—February 12.—The cry of wild geese flying north was heard yesterday and to-day.

*Wytheville, Virginia.*—February 21.—Robins first appear in numbers. 28th, frogs first heard. The ground in garden to-day would admit of being worked; in some shaded fields, near woods, the ground still remains frozen.

*Ashland, West Virginia.*—February 24.—Thunder and lightning, with hard wind from the west, this morning.

*Atlanta, Georgia.*—February 24.—Thunder at 7 p. m. in the southwest. 27th, blackberry bushes begin to leaf out.

*Natchez, Mississippi.*—February 17.—Lightning and thunder in the southwest at 7 p. m.

*Grenada, Mississippi.*—February 15.—Thermometer 11° at 7 a. m. It is the coldest here since January 6, 1864, when the thermometer was at zero.

*Chilesburg, Kentucky.*—February 24.—A heavy thunder-storm passed over from the south between two and three o'clock this morning.

*Austinsburg, Ohio.*—Blue-birds appeared on the 27th. Robins singing on the 28th.

*Urbana, Ohio.*—Blue-birds seen on the 20th; robins on the 21st. Ground clear of snow on the 22d, having been covered since the 22d of January with the exception of one day, making thirty days. 23d, thunder occasionally from 7½ p. m. to 10½ p. m.

*Kingston, Ohio.*—February 24.—The frost is all out of the ground, except a stratum about an inch thick at the depth of six inches.

*Cleveland, Ohio.*—February 16.—Heavy reports and shaking of ground last night, caused by cracks made in the surface of the ground from the effects of the extreme cold.

*New Lisbon, Ohio.*—February 9.—Blue-birds and robins come.

*Marion, Ohio.*—February 23.—Thunder-storm in the night.

*Milnersville, Ohio.*—February 21.—Heard the American robin to-day for the first time. The blue-bird and the great Carolina wren, the cardinal grosbeak, the black-capped and the tufted titmouse, have been here nearly all winter. The common crow and the American starling or meadow lark have been here for about two weeks.

*Toledo, Ohio.*—The month of February was much colder than usual, and the thermometer on the 16th fell one degree lower than it has been observed here for six years.

*Norwalk, Ohio.*—The morning of the 16th February was the coldest during the period in which the observer has kept a record, beginning January, 1861. Probably all the cherries, peaches, and many of the grapes are killed in this vicinity.

*Gallipolis, Ohio.*—Thunder-storm in the morning of the 24th. The cold of the 15th and 16th froze the ground to the depth of ten inches, ground bare; no snow this month.

*Saybrook, Ohio.*—February 15.—Lake Erie covered with ice as far as can be seen. 15th, cracks in the ground to-day, mostly across the roads. Sharp reports were heard last night, as if some heavy weights were falling. One crack is said to be an inch or two in width.

*Hornstead, Michigan.*—February 15.—Severe storm all day; much snow fell and drifted. 28th.—The winter has been colder and more severe than for thirteen years past.

*Richmond, Indiana.*—February 15.—The coldest day the observer has on record so late in the winter; and the coldest twenty-four hours since the 22d of January, 1857.

*New Harmony, Indiana.*—February 23.—Heavy thunder-storm at 5 p. m.

*Aurora, Indiana.*—February 23.—Lightning in the west and northwest in the evening. 28th.—The winter has been remarkable for the small amount of snow that fell.

*Columbia City, Indiana.*—A general thaw occurred about the 22d, causing the river to rise higher than at any time this winter. 23d, lightning, thunder and heavy rain. 24th to 28th, ice breaking up and leaving. 27th, blue-birds appear.

*Balbec, Indiana.*—February 23.—Thunder-gust at 9 p. m.

*Spiceland, Indiana.*—February 23.—Several heavy reports of thunder from 8 to 9 p. m.

*Marengo, Illinois.*—February 27.—Note of prairie hen first heard, by which is understood here, “Winter’s broke.”

*Clinton, Illinois.*—February 23.—Heavy thunder at  $10\frac{1}{2}$  a. m. several times.

*Aurora, Illinois.*—February 28.—The ground is frozen to the depth of two and a half feet. The snow and ice on the surface have all disappeared.

*Augusta, Illinois.*—February 21.—A large body of snow on the ground melted to-day and ran off in the river, raising the creek high with water.

*Ottawa, Illinois.*—February 14.—The snow storm which commenced on the night of the 12th still continues, and is more severe, and the cold more intense, than any that has heretofore occurred during the winter. A short time before 7 a. m. the snow began drifting. The railroad cars are lying over on account of the drifts. 26th and 27th, the ice is beginning to break in the Illinois river, which is very much swollen.

*Riley, Illinois.*—The ground is frozen fully four feet deep. The mean temperature of the month is  $4.79^{\circ}$  below the mean of twelve years; yet the month has been remarkably pleasant and agreeable for business. Sleighing ended on the last day of the month.

*Sandwich, Illinois.*—Seven inches of snow fell during the night of the 13th, the wind light and changing during the night from northeast to southwest. During the 14th the wind blew a violent gale from the west and the thermometer fell rapidly. The 15th was intensely cold; before noon the wind moderated, and soon changed to southwest, and the cold increased during the night, reaching the lowest point on the morning of the 16th. Owing to the gale the cold was more piercing and penetrating than during the great storm two years ago. The snow was much drifted, travel on many of the railroads suspended for three

or four days, and heavy losses were sustained from injury to locomotives and rolling stock generally.

*Coloma, Illinois.*—February 22.—Distant thunder in the west from 3 p. m. to 4 p. m. 28th, frost nearly all out of the ground. The mud has rendered the roads almost impassable for the last two weeks.

*Springfield, Illinois.*—February 14.—The wind blew a gale to-day from the west and northwest, and the worst snow-drifts for many years. Some stock perished in the drifts.

*Mount Sterling, Illinois.*—Several gentlemen, after carefully examining the peach-buds in their orchards in this town and vicinity, pronounce them all or nearly all killed.

*Loami, Illinois.*—February 7.—Blue-birds made their appearance. 21st, first song from the robin.

*Wyanet, Illinois.*—February 14.—The most tedious storm since January 1, 1864. Intensely cold on the 15th, and morning of the 16th. Many fowls and some hogs and calves were frozen to death, and railroads drifted so as to stop travel.

*Golconda, Illinois.*—February 6.—Blue-birds first appeared. 28th.—No thunder or lightning this winter, and the ground has been at no time covered with snow.

*Harrisonville, Missouri.*—February 23.—At 4 a. m., thunder commenced in the west, with a shower of hail which continued about half an hour, when it became distant towards the southwest.

*Wyaconda Prairie, Missouri.*—February 15.—Snow-drifts nearly as high as the fences. 20th, sleighing all gone; it has been good since the 19th of January. 27th, robins singing, prairie chickens crowing, blue-birds returned. 28th, wild ducks and killdeers returned. Wyaconda bottom overflowed since the 23d.

*St. Louis, Missouri.*—February 21.—Ice running in the river until to-day, so as to interrupt navigation, especially on the 15th to the 18th. Thunder-storm on the 23d at 9 a. m.

*Athens, Missouri.*—February 14.—The wind blew a gale, driving the snow into immense drifts, filling the lanes running north and south and seriously obstructing travel. 26th, observed the first blue-birds of the season. 28th, numerous flocks of wild geese and ducks going north.

*Monticello, Iowa.*—February 15.—Ground frozen three and a half feet on the unbroken prairie. 28th, the temperature of wells in this vicinity, as far as examined, is 45° for the lowest, 46° highest. This is the warmest day of the month; snow going rapidly; streams are rising very fast. This has been the coldest month this winter.

*Independence, Iowa.*—February 28.—The snow is now melting very fast, and a few days like the present will break up the ice and open the river.

*Clinton, Iowa.*—February has been a very changeable month, with some extremely cold weather; sleighing lasting until the end of the month. There are no air-holes in the river, except one, for miles up and down. The ice is from two to two and a half feet thick, very firm and solid. There have been holes open in every mile or two every winter, during the coldest weather, for four years past. A high river is expected this spring.

*Guttenberg, Iowa.*—February 14.—Northwest storm from west-northwest set in at 4 a. m., drifting the snow in large masses.

*Ceres, Iowa.*—February 28.—Frost in the ground four feet deep.

*Independence, Iowa.*—February 28.—Sleighing has been good for seven consecutive weeks. Yesterday the snow commenced melting, and to-night it has nearly all disappeared. As a consequence, the small streams are overflowing their banks.

*Madison, Iowa.*—February 13.—Seven and a half inches of snow fell to-

day. 14th, gale from the northwest all day. Drifts in some places in narrow lanes, from five to six feet high, in the evening; some calves froze at night. 15th, the coldest day of the winter. 27th, blue-birds came.

*Muscatine, Iowa.*—February 21.—Sleighing about all gone; thirty-seven days in all. 27th.—Ice froze twenty-four inches thick on ponds this winter. March 1st, the last team crossed on the ice on the river; seventy-seven days crossing this winter.

*Des Moines, Iowa.*—February 13.—Driving snow-storm. 14th, the most uncomfortable day of the winter, intensely cold, with a furious wind. 15th.—Thermometer this morning lower than yesterday, but the cold was not felt so severely on account of the wind having fallen. 28th, observed wild geese passing north for the first time.

*Weyauwega, Wisconsin.*—February 28.—This is the warmest day since the 15th of November; sleighing is good yet, but a few days like this will spoil it.

*Baraboo, Wisconsin.*—February 28.—The winter has been the most remarkable one known in this part of the State for steadiness of temperature, having had no mud, and no extreme cold for this latitude. There has been less high wind than in any previous winter within recollection.

*Waupaca, Wisconsin.*—Sleighing has been fine all the month; the cold has been steady, but not much extreme cold. The 15th was the coldest day of the winter. The last day of the month was a beautiful spring day.

*New Ulm, Minnesota.*—February 14.—Gale from the northwest began last night and continued all this day, and air filled with drifting snow.

*Afton, Minnesota.*—February 28.—Heavy fog this evening; little or no frost in the ground; snow about twenty inches deep where it is not drifted; ice in the river very thin, owing to the heavy covering of snow.

*Atchison, Kansas.*—February 18.—Blue-birds are seen and heard singing. 13th, wind light from the northeast; six inches of snow. 14th, gale from the northwest. 26th, the ice in the Missouri river, at this point, begins to move. 28th, the Missouri river clear of ice at noon to-day, and boats crossing.

*Fort Riley, Kansas.*—February 12.—Snow from 7 to 8 a. m., not measurable. 13th, snow from 1 p. m. till 1 o'clock in the night; at 7 p. m. a heavy gale came up, continuing all night without intermission. 23d, the prairie on fire within half a mile of the fort.

*Council Grove, Kansas.*—February 16.—Winter broke. 27th, frost all out of the ground.

*Bellevue, Nebraska.*—The storm on the evening of the 13th commenced about 8 p. m. very suddenly, and was the most violent that has been this winter. The snow that fell on the 12th and 13th was blown from the plains and fields till it found a shelter, leaving the ground bare in most places. Some geese flying north on the 27th and 28th. The river is still closed, and the ground bare except where there are drifts. Frost in the ground except surface of two or three inches.

*Glendale, Nebraska.*—The observer states that the 14th of February was the coldest day known in Nebraska since the white men have had possession. The mean temperature of the day was  $12^{\circ}$  below zero, with a fierce wind. The minimum occurred the next morning,  $32^{\circ}$  below zero. 27th, by digging in on open, level, exposed ground, it was found frozen thirty inches deep. 28th, the Platte and Missouri rivers are breaking up; ice from twenty to twenty-three inches thick. First flock of wild geese seen going north.

*Great Salt Lake City, Utah.*—February 28.—The winter has been steady; no severe storms; a great amount of snow in the mountains.

## Temperature and wind at 7 a. m. January 5-10, 1866.

(Continued from the last report, page 122.)

Place.	January 5.		January 6.		January 7.		January 8.		January 9.		January 10.	
	Tem.	Wind.	Tem.	Wind.								
St. John, New Brunswick..	7	NW.	-18	NW.	-21	NW.	-18	NE.	-4	NE.	9	NE.
Michipicoton, Canada West.	-20	N.	-40	0	-32	N.	-4	SE.	.....	0	.....	0
White Plains, New York..	4	.....	8	.....	13	.....	-20	.....	4	.....	17	.....
New Castle, Pennsylvania..	9	.....	16	.....	15	.....	-5	.....	0	.....	9	.....
Natchez, Mississippi.....	22	N.	26	SE.	46	SE.	48	E.	36	E.	28	SE.
Grenada, Mississippi.....	18	NW.	24	NW.	26	SE.	41	NW.	29	SE.	22	SE.
Steubenville, Ohio.....	12	S.	17	SW.	17	NE.	-6	NW.	4	N.	10	SE.
Thunder Bay Island, Mich.	8	.....	.....	.....	0	.....	12	.....	.....	.....	22	.....
St. Louis, Mo., Engelmann.	14	SW.	31	S.	27	NW.	19	E.	19	SE.	35	SE.
Helena City, Montana Ter.	10	0	11	S.	21	0	15	S.	12	S.	19	S.
Olympia, Washington Ter..	36	.....	37	.....	36	.....	26	.....	23	.....	25	.....
Neah Bay, Washington Ter.	42	SW.	40	SW.	36	SW.	38	E.	34	E.	36	SE.
Sacramento, California.....	45	SE.	45	SW.	39	SE.	48	SE.	34	NW.	33	NW.
Monterey, California.....	46	SW.	53	SW.	46	0	39	SW.	42	0	44	S.
Meadow Valley, California.	35	.....	36	.....	27	.....	32	.....	24	.....	26	.....
San José, Costa Rica .....	63	E.	61	NE.	65	NE.	65	NE.	64	NE.	63	NE.
Aspinwall, Panama.....	79	N.	79	NW.	76	N.	79	SE.	79	SE.	79	NE.

## CORRECTION.

In the last report, page 109, fifth line, for "one precise hour," read "the precise hour."

